Ann. Natal Mus. Vol. 40 Pages 47–82 Pietermaritzburg December, 1999

Afrotropical Asilidae (Diptera) 31. A review of the genera *Stenopogon* Loew, 1847 and *Rhacholaemus* Hermann, 1907 with the description of new genera and species (Stenopogoninae)

by

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ABSTRACT

In revising the afrotropical genera *Stenopogon* and *Rhacholaemus* new taxa have been described and taxonomic changes made:

New genera: ***Afroscleropogon*** (Genotype *Dasypogon dilutus* Walker, 1851); ***Haroldia*** (Genotype *Stenopogon trivialis* Oldroyd, 1974).

New species: ***Afroscleropogon***: *bullingtoni, clementsi, lavignei, nagatomii*; ***Haroldia***: *oldroydi*; ***Rhacholaemus***: *artigasi, fisheri, grimmi, hradshyi, josephi, nelsoni, tsacasi*; ***Stenopogon***: *lehri*.

New combinations: Transferred to ***Afroscleropogon***: *armatus* (from *Stenopogon*), *braunsi* (from *Stenopogon*), *dilutus* (from *Dasypogon*). Transferred to ***Haroldia***: *trivialis* (from *Stenopogon*). Transferred to ***Rhacholaemus***: *antigenes* (from *Dasypogon*).

New Synonyms: *Stenopogon atrox* Oldroyd, 1974 and *S. compactus* Oldroyd, 1974 = *Rhacholaemus variabilis* Hermann, 1907.

Lectotype designation: *Rhacholaemus variabilis* Hermann, 1907.

Keys to the genera of afrotropical Stenopogoninae and the species of *Afroscleropogon*, *Haroldia* and *Rhacholaemus* are provided. Only one species of *Stenopogon* is believed to be present in the Afrotropics – the newly described *S. lehri*. The distributions and systematic positions of taxa are discussed.

INTRODUCTION

Stenopogon Loew, 1847, has for many years been considered to have an almost cosmopolitan distribution, being apparently absent only from the Australasian Region (Daniels 1989). A survey of the available catalogues provided the following summary of information:

- Palaearctic (Lehr 1988): 75 species (including subspecies) plus 5 doubtful species.
- Nearctic (Martin & Wilcox 1965): 44 species (49 listed in Wilcox 1971).
- Oriental (Oldroyd 1975): 10 species.
- Neotropical (Martin & Papavero 1970): 42 species (including 15 species of *Ospriocerus* Loew, 1866, which is no longer considered a subgenus of *Stenopogon*).
- Afrotropical (Oldroyd 1980): 8 species.

Although years of work on the afrotropical Stenopogoninae resulted in the publication of a key to the genera (Londt 1994*b*), a number of questions remained unanswered. Questions such as – Why are all afrotropical *Stenopogon*s, with the exception of *S. arabicus* (Macquart, 1838), confined to southern Africa? – What is the relationship between these southern African *Stenopogons* and the monotypic *Rhacholaemus* Hermann, 1907, from the same geographical area? – Should *Scleropogon* Loew, 1866, with its North America genotype, be accepted as a synonym of *Stenopogon*, as indicated in the Afrotropical Catalogue, when the genus is considered distinct in the Nearctic Region (Wilcox 1971)? These questions, along with a fine collection of unidentified specimens (some clearly representing undescribed species), prompted this study.

The question concerning the relationship between *S. arabicus* and the other afrotropical species listed as *Stenopogon* in the catalogue has now been answered, at least in part. A study of the unique holotype of *Dasypogon arabicus* has shown that the species should be referred to *Perasis* Hermann, 1905, and that it is almost certainly a palaearctic taxon (Londt 1999*b*). Answers to the other questions are provided in this paper.

THE STATUS OF *STENOPOGON, SCLEROPOGON* AND *RHACHOLAEMUS* IN THE AFROTROPICS

Afrotropical species of Asilidae which have been assigned to the three genera under discussion, together with species of the easily recognised genus *Gonioscelis* Schiner, 1866, form a natural group characterised by the possession of a laterally compressed head. Hull (1962) provided a tribal name, Stenopogonini, for taxa with this feature. The highly developed, heavily spinose, raptorial prothoracic femora allow species of *Gonioscelis* to be readily separated from other Stenopogonini (*sensu* Hull) and so the genus is excluded from further discussion.

Stenopogon has been separated from *Scleropogon* (and *Ospriocerus*) mainly on the fact that the katatergites (= hypopleura) are asetose, or 'bare of hairs' (Hull 1962, Wilcox 1971, Wood 1981). Although I am unable to comment on the usefulness of this character, I can confirm that all examples of identified nearctic (9 species) and palaearctic (8 species including genotype *S. sabaudus* (Fabricius, 1794)) *Stenopogon* species available to me have asetose katatergites. Furthermore, the three nearctic *Scleropogon* species studied (including genotype *S. picticornis* Loew, 1866) have setose katatergites. Based on this character alone it can be stated that none of the afrotropical species previously assigned to *Stenopogon* are congeneric. The discovery of an undescribed species, from Kenya and Somalia, which appears to be a true *Stenopogon* means that this species (*S. lehri*) alone can at present be regarded as a *Stenopogon*. The positions of all the catalogue-listed *Stenopogon* species therefore require re-evaluation. Oldroyd (1974: 75), although aware of the possibility that the South African species handled by him could be regarded as species of *Scleropogon*, preferred to 'leave them all provisionally in *Stenopogon*.' Clearly the question of assignment of the afrotropical taxa to *Scleropogon* requires consideration. As the monotypic *Rhacholaemus* also has setose katatergites, this suggests that *R. variabilis* Hermann, 1907, should also be included in any further debate.

A study of all the relevant type material, as well as many previously unrecorded specimens, resulted in my decision to group the southern African species concerned into three genera. Grounds for the erection of a separate genus (*Haroldia*) for *S. trivialis* Oldroyd, 1974, and an undescribed species (*H. oldroydi*) is strong. The other species previously listed as *Stenopogon* or *Rhacholaemus*, together with newly described species, are divided into two similar-sized groups, primarily on characteristics of the antennae and male genitalia. The name *Rhacholaemus* is retained for the group containing the genotype, *R. variabilis*, while a new genus name (*Afroscleropogon*) is provided for the other group. Grounds for these actions are presented in the text that follows.

MATERIALS AND METHODS

Every effort was made to locate and examine all type material. In addition, material belonging to the Natal Museum, South African Museum and Albany Museum was studied. Some material, kindly sent to me by Mr Robert Copeland, has been deposited in the National Museum of Kenya, Nairobi. Abbreviations for the institutions which provided specimens for study are listed below, together with the names of people at these institutions who kindly assisted me.

AMGS – Albany Museum, Grahamstown, South Africa (F. Gess)
BMNH – The Natural History Museum, London, UK (J. Chainey)
MZLU – Zoological Museum, Dept. Zoology, Lund, Sweden (R. Danielsson)
NMKE – National Museum, Nairobi, Kenya
NMSA – Natal Museum, Pietermaritzburg, South Africa
SAMC – South African Museum, Cape Town, South Africa (M. Cochrane)
ZSMC – Zoologische Staatssammlung, Munich, Germany (W. Schacht)

In recording label data for type material a standard format is used, where information contained on each label is demarcated by the use of single inverted commas, each line of data being separated by a slash (/). A ~ indicates that the following data are on the reverse side of the label just documented, while square brackets are used to indicate useful additional information not found on labels. When recording data for additional material (i.e. specimens without type status) information is also given (where available) in a standard order (place name; grid reference or co-ordinates, altitude, date of collection (month usually indicated in roman numerals); collector; institution housing material). Specimens are also arranged roughly in geographical order (i.e. according to latitude and then longitude) to facilitate mapping.

In all instances specimens were dry-mounted on pins. Drawings were executed with the aid of a drawing tube, male genitalia being first excised and macerated in hot potassium hydroxide. Genitalia were stored temporarily in small plastic vials, containing a mixture of ethanol and glycerine, until the completion of the study when they were sealed in polyethylene genitalia vials containing glycerine, and attached to the specimen pins.

Long, repetitive descriptions have been avoided by (1) placing species descriptions in keys, (2) providing numerous illustrations, and (3) providing a tabulated character matrix (Tables 2–3). In naming new taxa, an opportunity was taken to recognise those asilid workers who have assisted me during the time I have been involved with the taxonomy of the group. All new taxa, with one exception (i.e. *Afroscleropogon*), are dedicated to colleagues (past and present) in appreciation of their assistance, encouragement and support. In descriptive passages the use of standard abbreviations has contributed to shortening this paper. While terminology generally follows that of McAlpine (1981), the interpretation of antennal characters follows the recent work of

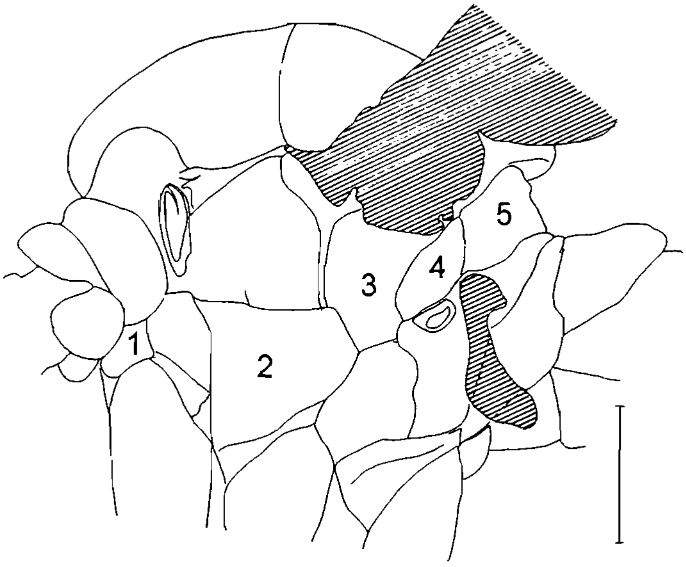


Fig. 1. *Afroscleropogon dilutus*, lateral aspect of thorax, showing positions of important pleura. 1 = Propleuron, 2 = Katepisternum, 3 = Anepimeron, 4 = Katatergite, 5 = Anatergite.

Stuckenberg (1999). As the presence or absence of macrosetae on various thoracic pleura is important, the positions of these are illustrated (Fig. 1)

Discussions on the relationships which may exist between the taxa handled in this paper is of a preliminary nature. A full phylogenetic analysis of all taxa in the tribe is beyond the scope of this study.

TAXONOMY

Afroscleropogon gen. n.

Type species: *Dasypogon dilutus* Walker, 1851, by present designation.

Diagnosis: Stenopogoninae with the following combination of character states.

Head: Face narrow, such that head appears circular in anterior aspect (i.e. head approximately as wide as high), and not markedly gibbose. Mystax, although best developed ventrally, extends from antennal bases to epistomal margin. Antennal style composed of 2 elements (a small segment and a usually apical spine-like element) which are usually apically situated, but may be sub-apical. Proboscis either straight and moderately well developed or robust and curved (in lateral view).

Thorax: Dorsocentral macrosetae confined to posterior half of mesonotum. Katatergites with well-developed macrosetae. Anatergite and katepisternum asetose. Scutellum with 6–8 marginal macrosetae. Legs: Prothoracic femur normally developed (i.e. not strongly raptorial as in *Gonioscelis*); with fine setae or well-developed, although short, macrosetae ventrally. Wing: Membrane covered with microtrichia (some species have white microtrichia giving the wings, at least in part, a milky appearance); m_3 closed and stalked, cup narrowly open or closed on margin. *Abdomen*: ♂ genitalia unrotated; hypandrium bifurcate (bilobed) distally (apparently as a result of terminal splitting rather than lateral expansion).

Justification for the establishment of this genus is not particularly strong; its similarity to *Scleropogon* being obvious. Not only do both genera possess katatergal macrosetae, but Wilcox's (1971) richly illustrated account of the nearctic *Scleropogon* suggests that there are close similarities in male genital form. The antennal form in *Afroscleropogon* and *Scleropogon* appears identical. So what then are the grounds for separation?

In comparing the genotype, *Scleropogon picticornis* Loew, 1966, with all known species assigned to *Afroscleropogon* the following differences may be considered significant: 1. *S. picticornis* has a strongly gibbose face (similar to *Stenopogon*, see Fig. 127) – this condition is not found in *Afroscleropogon* 2. Cell r_5 is closed and stalked – (Wilcox (1971) describes two groups of *Scleropogon* – one with the cell closed, the other with it open) – all afrotropical Stenopogonini (*sensu* Hull), including *Afroscleropogon*, have this cell open. 3. The katepisternum has a good cluster of about 20 fine setae – these setae are absent in all afrotropical Stenopononini (a few exceptional individuals may have a single or at most 2–3 setae) and are not found in *Afroscleropogon*. 4. The abdominal terga (especially in the male) are equipped with strong macrosetae laterally – none of the genera handled in this paper, including *Afroscleropogon*, have such macrosetae (the only possible exception is *Rhacholaemus artigasi*). 5. *S. picticornis* is very large when compared with *Afroscleropogon* species (at least double the length of the biggest *Afroscleropogon*).

Although I am aware that *S. picticornis* may not be 'truly representative' of the genus, it is the genotype and, until there is certainty about the allocation of all the many nearctic species, I believe it is reasonable to suggest that the species of *Afroscleropogon* are sufficiently different to warrant placement in their own genus.

For the present I propose the acceptance of *Afroscleropogon* as a valid genus, at least until its relationships with other members of the subfamily world-wide are better understood.

Key to species of *Afroscleropogon*

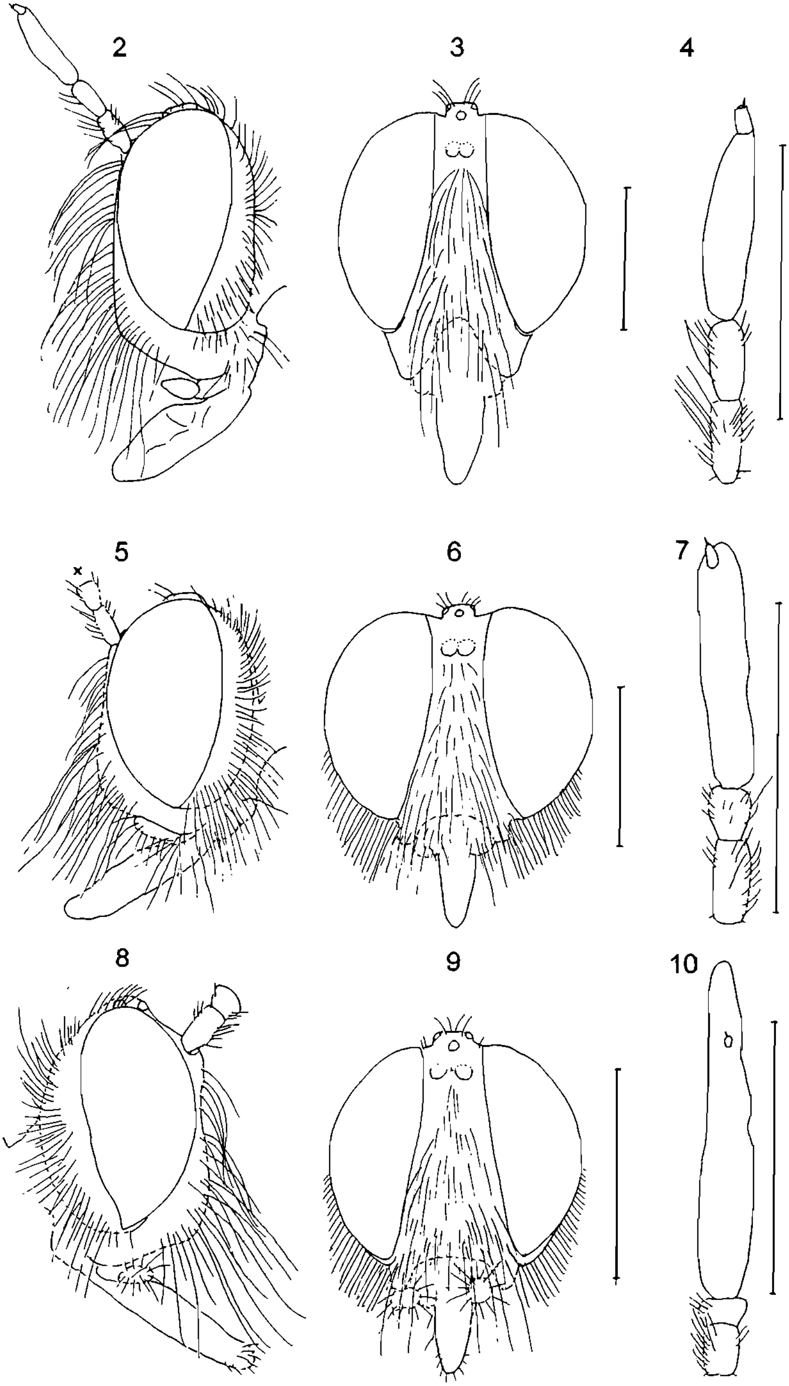
(Species descriptions are supplemented by information contained in Tables 2–3)

1 Antennal style situated sub-apically on postpedicel (Figs 7, 10); proboscis straight in lateral view (Figs 5, 8) 2

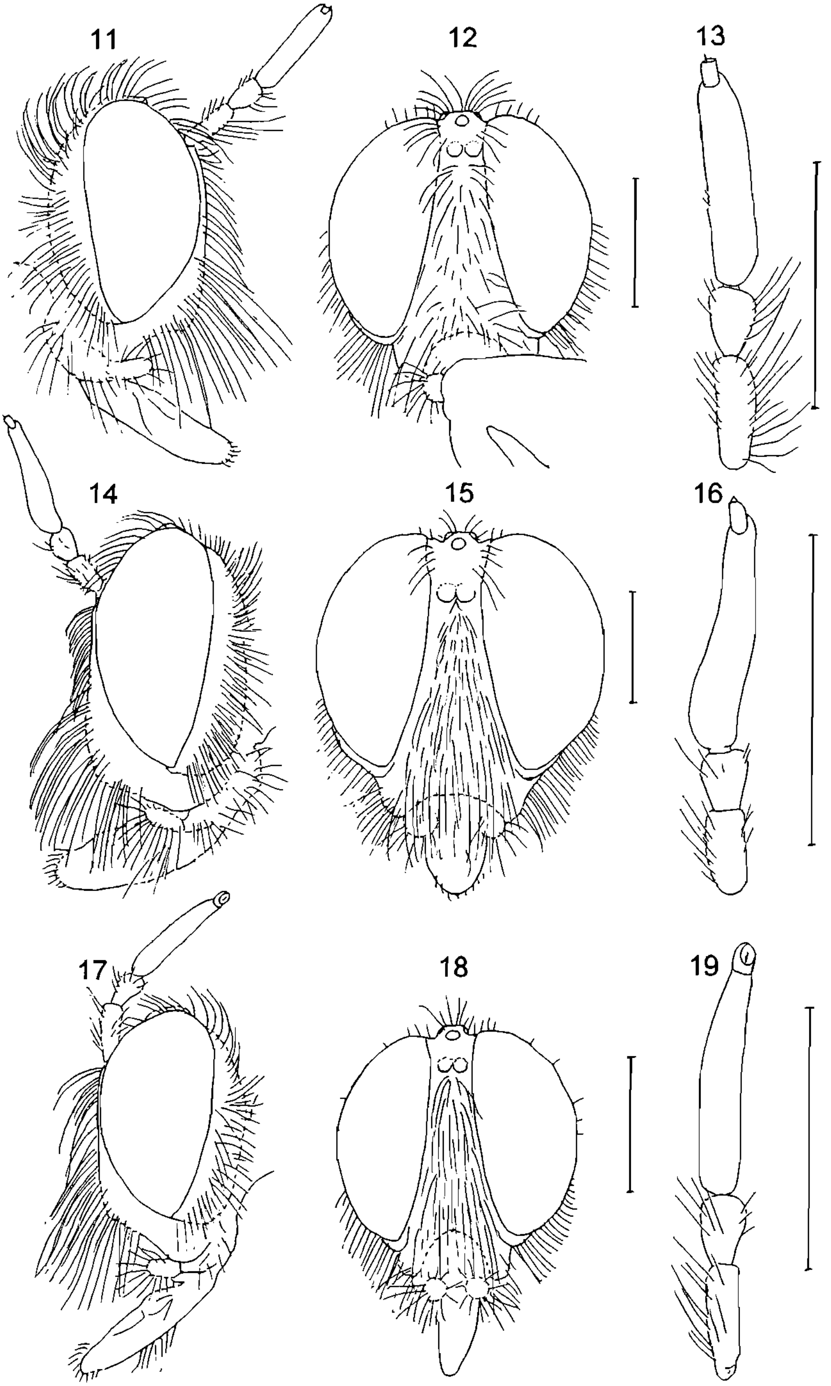
– Antennal style situated terminally on postpedicel (Figs 4, 13); proboscis may be somewhat curved in lateral view (e.g. Figs 2, 14) 3

2 Antennal postpedicel greatly extended beyond poorly developed style; thoracic and abdominal pruinescence generally silvery; macrosetae of mesonotum, legs and abdomen pale whitish; tarsi brownish (especially distally); head (Figs 8–10), wing (Fig. 25) and ♂ genitalia (Figs 35–38) as illustrated .... **bullingtoni** sp. n.

Material: NAMIBIA: 1♂ **Paratype**, 'Namibia. 28 km / S. of Karasberg [2818BD] / On Warmbad road / 31 Oct. 1977 / VB Whitehead / On Asclepias' (SAMC); SOUTH AFRICA: 1♂ **Holotype**, 'Albert Dist., Btw Burghersdorp [Burgersdorp – 30°59'S:26°19'E] / & Nooitgedacht [probably a



Figs 2–10. *Afroscleropogon* species, showing head in lateral and anterior aspects, and lateral aspect of left antenna (unless otherwise indicated). 2–4. *A. armatus* (holotype ♂). 5–7. *A. braunsi* (holotype ♂; x = antenna broken; Fig. 7 is of right antenna). 8–10. *A. bullingtoni* (paratype ♂). Scale lines = 1 mm.



Figs 11–19. *Afroscleropogon* species, showing head in lateral and anterior aspects, and lateral aspect of left antenna (unless otherwise indicated). 11–13. *A. clementsi* (holotype ♂; Fig. 13 is of right antenna). 14–16. *A. dilutus* (Swartkop ♀). 17–19 *A. lavignei* (holotype ♂). Scale lines = 1 mm.

farm] / S.A. Museum' – 'Museum Staff / Oct. 1935' (SAMC). **Etymology**: Named for Stephen Bullington.

– Antennal postpedicel only slightly extended beyond base of moderately developed style; thoracic and abdominal pruinescence generally golden; macrosetae of mesonotum, legs and abdomen shiny yellow; tarsi yellowish (as femora and tibiae); head (Figs 5–7), wing (Fig. 24) and ♂ genitalia (Figs 31–34) as illustrated ....**braunsi** (Oldroyd, 1974), **comb. n.**

Synonymy: *Stenopogon braunsi* Oldroyd, 1974: 77; 1980: 369.

Material: SOUTH AFRICA: 1♂, Richtersveld, Annisfontein [28°25'S:16°53'E], 17–23.xi.1975, VB Whitehead, Malaise Trap (SAMC); 2♂, 2km NE Carnarvon, 3022CC, 1350 m, 14.xi.1986, Londt & Quickelberge, Flat scrubland (NMSA); 2♀, Doringbaai [31°49'S:18°14'E], xi.1956, SAM (SAMC); 1♂, 67 km W Williston, 3120AC, 1090 m, 15.xi.1986, Londt & Quickelberge, Riverbed area (NMSA); 5♂, 40 km SE Calvinia, Middelpos Rd, 3120CA, 1240 m, 17.xi.1986, Londt & Quickelberge, Dry woody scrubland (NMSA); 1, 2 km N Middelpos, 31°54'S:20°14'E, 1250 m, 29.xi.1990, Londt & Whittington, dry scrub on dam bank (NMSA); 1♂, 43 km SE Middelpos, 31°58'S:20°35'E, 1270 m, 28.xi.1990, Londt & Whittington, Near Renosterrivier (NMSA); 1♀, Bulshoek [32°01'S:18°47'E] Clw [Clanwilliam], xii.1956, SAM (SAMC); 3♂, 18 km N Sutherland, 32°16'S:20°41'E, 1350 m, 26.xi.1990, Londt & Whittington (NMSA); 1♂, Laingsburg Distr., Merweville [32°40'S:21°31'E], i.1959, H Zinn (SAMC); 2♀, Merweville, Koup, Dikbome, i.1953, H Zinn (SAMC); 1♂, Beaufort West [32°21'S:22°35'E], Oukloof, i.1949, Zinn-Hesse, Mus. Exp. (SAMC); 1♂1♀, 3 km S Prince Albert, 3322AA, 10.xi.1986, Londt & Quickelberge, Oukloof Sand/Acacias (NMSA); 1♂, Karoo National Park, 15 km N Beaufort West, 3222AB, 12.xi.1986, Londt & Quickelberge, Dry *Acacia* woodland (NMSA); 1♀, Bushmans Riv, Letjiesbosch [Letjiesbos Station 3222CB], Gouph, xi.1935, Mus. Staff (SAMC); 1♀, Touws R. [River -33°20'S:20°02'E], Ouberg Pass, xii.1962, SAM (SAMC); 2♂, Tankwa Karoo, Waterval [32°35'S:20°25'E], xi.1952, Mus. Expd. (SAMC); 1♂, Tankwa Karoo i.1949, Zinn-Hesse, Mus. Exp. (SAMC), 1♂ **Holotype**, 'Capland / Willowmore [33°17'S:23°30'E] / 1.xii.1920, Dr. Brauns', 'Collection / Transvaal / Museum' (NMSA); 1♂ **Paratype**, 'Capland / Willowmore / xii.1907, Dr. Brauns', 'Collection / Transvaal / Museum' (NMSA); 2♀, Gamtoos valley bush, Hankey area, 3324DA, 5.xii.1967, B&P Stuckenberg (NMSA); 1♂1♀, Wit River valley, Cambria area, Patensie Dist., 3324DA, 2.xii.1967, B&P Stuckenberg (NMSA).

3 Proboscis stout (Figs 2, 11, 14, 20); antennal style cylindrical with spine-like element terminally situated 4

– Proboscis only moderately well developed (Fig. 17); antennal style broad, cup-shaped, with spine-like element sub-terminally situated; head (Figs 17–19), wing (Fig. 27) and ♂ genitalia (Figs 45–47) as illustrated ....**lavignei** sp.n.

Material: NAMIBIA: 1♂ **Holotype** 2♀ **Paratypes**, 'Katima Mulilo [17°30'S:24°16'E] / E. Caprivi / 20–28.x.1970 / A. Strydom' (NMSA). SOUTH AFRICA: 1♂ **Paratype**, 'Transvaal RSA / Kruger Nat Park / Punda Milia / 22 31 CA / 26–28.xi.1973 / J. van Reenen' (NMSA); 1♂, Kuruman [27°28'S:23°26'E], x.1939, Mus. Staff (SAMC); 3♀, Griqualand West, Niekerkshoop [29°19'S:22°50'E], x.1939, Mus. Staff (SAMC). **Etymology**: Named for Robert Lavigne.

4 Prothoracic femora ventrally with well-developed macrosetae situated in obvious, often protruding sockets 5

– Prothoracic femora ventrally lacking well-developed macrosetae, but equipped with fine setae only 6

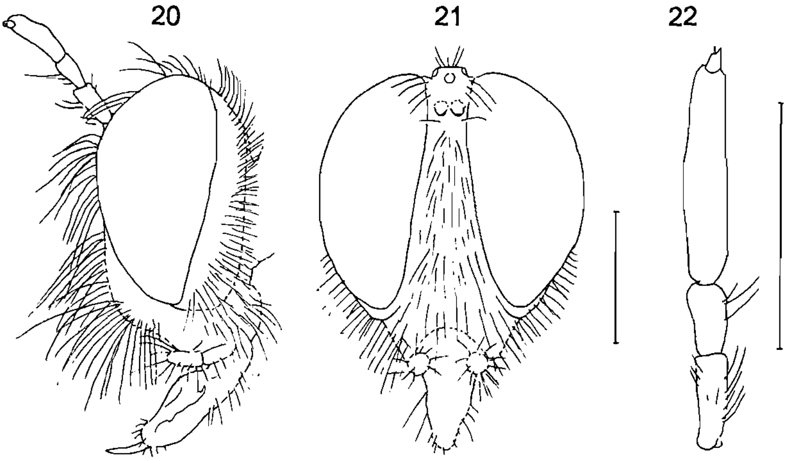
5 Ventral macrosetae of prothoracic femora yellow; legs fairly uniformly yellow; head (Figs 2-4), wing (Fig. 23) and ♂ genitalia (Figs 28-30) as illustrated ....
armatus (Oldroyd, 1974), **comb. n.**

Synonymy: *Stenopogon armatus* Oldroyd, 1974: 77; 1980: 369.

Material: BOTSWANA: 19♂13♀, Farmer's Brigade, Serowe, 2226BD or 22°25'S:26°44'E, P Forchhammer, Malaise Trap – dates 1983 (iv), 1984 (ii iii xii), 1985 (ii iii), 1986 (i ii iii iv ix xi), 1989 (xii), 1990 (i iii) 1991 (viii) (NMSA). NAMIBIA: 1♂, Khowarib, 1913BB, 18.v.1978, VB Whitehead (SAMC); SOUTH AFRICA: 2♂1♀, 10–15km W Platjan, Limpopo Riv., 2228DA, 26.i.1978, JGH Londt, Grass under or near big trees near river (NMSA); 1♂, 6 km N Vivo, 2229CC, 23–24.ii.1980, Londt & Schoeman, Bushveld veget, & old lands (NMSA); 1♀ **Holotype** 2♀ **Paratypes**, 'N.E. Zoutp. [Soutpansberg – 22°58'S:29°50'E] / dist. 7&8. 16 [1916] / H.G. Breyer', 'Collection / Transvaal / Museum' (NMSA).

– Ventral macrosetae of prothoracic femora dark red-brown; legs extensively dark red-brown; head (Figs 20–22) and ♂ genitalia (Figs 48–51) as illustrated .... **nagatomii** sp. n.

Material: SOUTH AFRICA: 1♀ [headless], Bushmanld., Henkries [Henkriesmond – 28°54'S:18°07'E], x.1911, Lightfoot (SAMC); 1♀ **Paratype**, 'Onseepkans [28°45'S:19°17'E] / nr Orange Riv / Bushmanland' ~ 'Mus. Staff / Oct. 1939' (SAMC); 1♂ **Paratype**, 'Bushmanld / Jackals Water [2917BB] / Lightfoot' ~ 'October / 1911' (SAMC); 1♂ **Holotype**, 1♂8♀ **Paratypes**, 'Aggenys [29°12'S:18°51'E] or / Bushmanland / Btw, Springbok / & Pella' ~ 'Mus. Staff / Oct. 1939' (SAMC); 3♂ **Paratypes**, 'Pofadder [29°08'S:19°23'E] / Bushmanland' ~ 'Mus. Staff / Oct. 1939' (SAMC); 2♂1♀ **Paratypes**, 'Putsonderwater [29°14'S:21°53'E] / N W C Prov' ~ 'Mus. Staff / Oct. 1939' (SAMC). **Etymology**: Named for Akira Nagatomi.



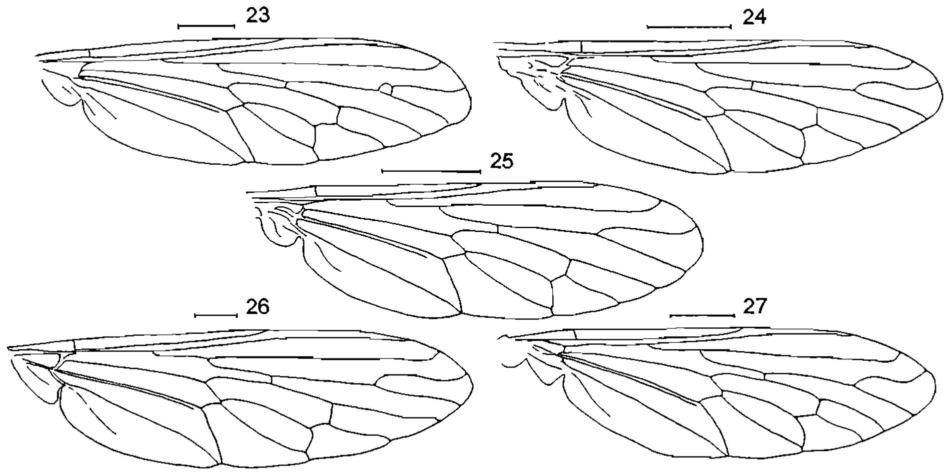
Figs 20–22. *Afroscleropogon nagatomii* (holotype ♂), showing head in lateral and anterior aspects, and lateral aspect of right antenna. Scale lines = 1 mm.

6 Mystax shiny orange-yellow; antenna mostly yellowish; head (Figs 14–16), wing (Fig. 26) and ♂ genitalia (Figs 42–44) as illustrated .... **dilutus** (Walker, 1851), **comb. n.**

Synonymy: *Dasypogon dilutus* Walker, 1851: 98; *Stenopogon holoxanthus* Hermann, 1907: 1; Hull 1962: 124; *Stenopogon holoxanthus pygmaeus* Hull, 1967: 244; *Stenopogon dilutus*, Oldroyd 1974: 75–77; 1980: 369.

Material: SOUTH AFRICA: 1♀ **Holotype**, 'S. Africa / Cape / ex. Coll. / W. W. Saunders / 1824', 'Type / *Dasypogon* / *dilutus* / Wlk', 'Holotype / *Dasypogon* / *dilutus* Walker / det. J.E. Chainey 1983' (BMNH); 1♀, Bowesdorp [30°09'S:17°52'E], xi.1931, Museum Staff (SAMC); 2♂2♀, Namaqualand, Between Kamieskroon [30°12'S:17°56'E] and Springbok, x.1934, Mus. Staff (SAMC); 1♀, 10 km E Kamieskroon, 3018AA, 630 m, 17.x.1977, RM Miller (NMSA); 2♂, Augusfontein (Calvinia) [31°28'S:19°47'E], viii.1947 (SAMC); 1♀, Dunedin [31°57'S:22°25'E], 1.xi.1979, VB Whitehead (SAMC); 1♂, Richmond [31°25'S:23°56'E] Dist., xi.1939, Mus. Staff (SAMC); 2♂1♀, Swartkop, 31 km NW Sutherland, 3220BA, 1600 m, 18–19.xi.1986, Londt & Quickelberge, Rocks Woody macchia (NMSA); 1♀, 18 km N Sutherland, 32°16'S:20°41'E, 1350 m, 26.xi.1990, Londt & Whittington, Renosterrivier area (NMSA); 1♂3♀, Tankwa Karoo, Waterval [32°35'S:20°25'E], xi.1952, Mus. Expd. (SAMC); 2♂, Moordenaars Karoo, Lammerfontein [32°58'S:20°49'E], x.1952, Mus. Expd. (SAMC); 3♂4♀, Beaufort West [32°21'S:22°35'E], Nieuwveldt, xi.1935, Mus. Staff (SAMC); 1♀, Aberdeen [32°29'S:24°05'E], i.1953, J Heyns

(NMSA); 2♂, Aberdeen [32°29'S:24°05'E], xi.1935, Mus. Staff (SAMC); 1♂, Mountain Zebra Nat. Park, 3225AD, 17–21.xii.1985, JGH Londt, Bushveld vegetation (NMSA); 1♀, Cradock [32°11'S:25°37'E], i.1947, JJ Moolman (NMSA); 1♀, *ca.* 16km NE Hogsback on Cathcart Road, 3226BD, 19.i.1984, D&C Barraclough, Rocky hillside (NMSA); 1♀, Fort Beaufort [32°47'S:26°38'E], Umdala, iii.1954, SA Museum (SAMC); 2♂, Fort Willshire nr. Alice [32°47'S:26°50'E], 21.i.1959, C Jacot-Guillarmod (AMGS); 1♂, Boskloof Farm nr. Worcester 33°36'S:19°34'E, 19–20.xii.1986, MW Mansell (NMSA); 1♂3♀, Hex Riv. [33°29'S:19°35'E], i. & xii.1884 (SAMC); 1♀, Goudini [33°40'S:19°16'E], 30.i.1944 (NMSA); 2♂2♀, Constable [33°16'S:20°18'E], xii.1962, SAM (SAMC); 1♀, Constable, ii.1958 (SAMC); 2♀, 18 m E Touws R. [33°20'S:20°02'E] to Hondewater, xii.1962, SAM (SAMC); 1♀, Montague [Montagu – 33°44'S:20°07'E], xii.1919, R Lightfoot (SAMC); 2♂, Koup Siding – Laingsburg [33°12'S:20°51'E], x.1952, Mus. Exp. (SAMC); 1♀, Seweweekspoort [33°24'S:21°24'E], 4–6.xii.1968, Potgieter & Jones (NMSA); 1♂, 15 km SE Oudtshoorn, 3322CB, 9.xi.1986, Londt & Quickelberge, Macchia / rocky hill (NMSA); 2♂2♀, Oudtshoorn, Zebra [33°45'S:22°19'E], x.1951, Mus. Expd. (SAMC); 1♀, Oudtshoorn [33°35'S:22°12'E] Distr., x.1952, Mus. Expd. (SAMC); 1♀, Klaarstroom [33°20'S:22°32'E] – Prince Albert, x. 1952, Mus. Expd. (SAMC); 1♂2♀, Prince Albert Dist., Tierberg (Res. Stat.), 33°7'42"S:22°16'24"E, 26.xi–5.xii.1987, FW SK & RW Gess (AMGS); 2♀, Prince Albert Dist., Tierberg (Study Site), 33°10'S:22°16'24"E, 26.xi–5.xii.1987, FW SK & RW Gess (AMGS); 5♂11♀, Willowmore [33°17'S:23°30'E], Dr. Brauns, dates 1907 (ii), 1908 (i xii), 1909 (xii), 1912 (ii), 1917 (xii), 1920 (x xi xii), 1921 (xii), 1925 (xii) (NMSA); 2♂3♀, 16 km SW Willowmore, 33°23'S:23°23'E, 900 m, 22.xi.1990, Londt & Whittington, Ghwarriepoort River 2 (NMSA); 1♀, Willowmore [33°17'S:23°30'E], 10.xii.1908, Dr Brauns (SAMC); 1♂, Willowmore [33°17'S:23°30'E], 25.xi.1909 (SAMC); 1♂, Willowmore, 15.i.1907 (SAMC); 1♀, Kirkwood [33°24'S:25°26'E], 22.i.1982, JG Theron (NMSA); 2♂, 15 km SE Kirkwood, 3325DA, 4.xi.1978, R Miller & J Londt, open bushveld scrub (NMSA); 4♂2♀, Addo district, Sundays River valley, 3325DA, 1–8.i.1978, JGH Londt, ex Malaise (NMSA); 2♂, Double Drift, Andries Vosloo Kudu Res., 33°06'S:26°47'E, 14.xii.1988, A Weaving (AMGS); 6♂3♀2?, Resolution [33°10'S:26°37'E], Albany Dist., dates 1928 (i), 1929 (i), A Walton (NMSA); 1♂9♀, Resolution, Grahamstown, 1930, Miss Walton (SAMC); 1♂1♀, Resolution, Grahamstown, 1929, Miss Walton (SAMC); 2♂, Resolution, Ft Brown, 8 & 10.i.1928, A Walton (AMGS); 1♂, Grahamstown [33°18'S:26°32'E], 7.i.1978, JGH Londt (NMSA); 1♂, Grahamstown, 8.xii.1964, DJ Brothers (AMGS); 1♂, Hilton Farm [33°15'S:26°21'E], W, Grahamstown, 6.xii.1976, Brothers & Jacot-Guillarmod (NMSA); 1♂1♀, Grahamstown, Hilton, 19.xi.1967, D Brothers (AMGS); 10♂6♀, Grahamstown, Hilton, 5.xi.1969, 11.xii.1969, 6.xii.1972, 13, 20 & 27.xii.1977, 2 & 10, 13 & 18.i.1978, 22–31.xii.1979, 2 & 5.xii.1980, FW Gess (AMGS); 5♀, Grahamstown, Hilton, 29.xi. & 2.xii.1979, FW & SK Gess (AMGS); 1♀, Grahamstown, Hilton, 20.xii.1977, RW Gess (AMGS); 1♂, Grahamstown, Hilton, 4.xii.1984, AJ Weaving (AMGS); 1♀, Grahamstown, Burnt Kraal, 23.i.1969, FW Gess (AMGS);

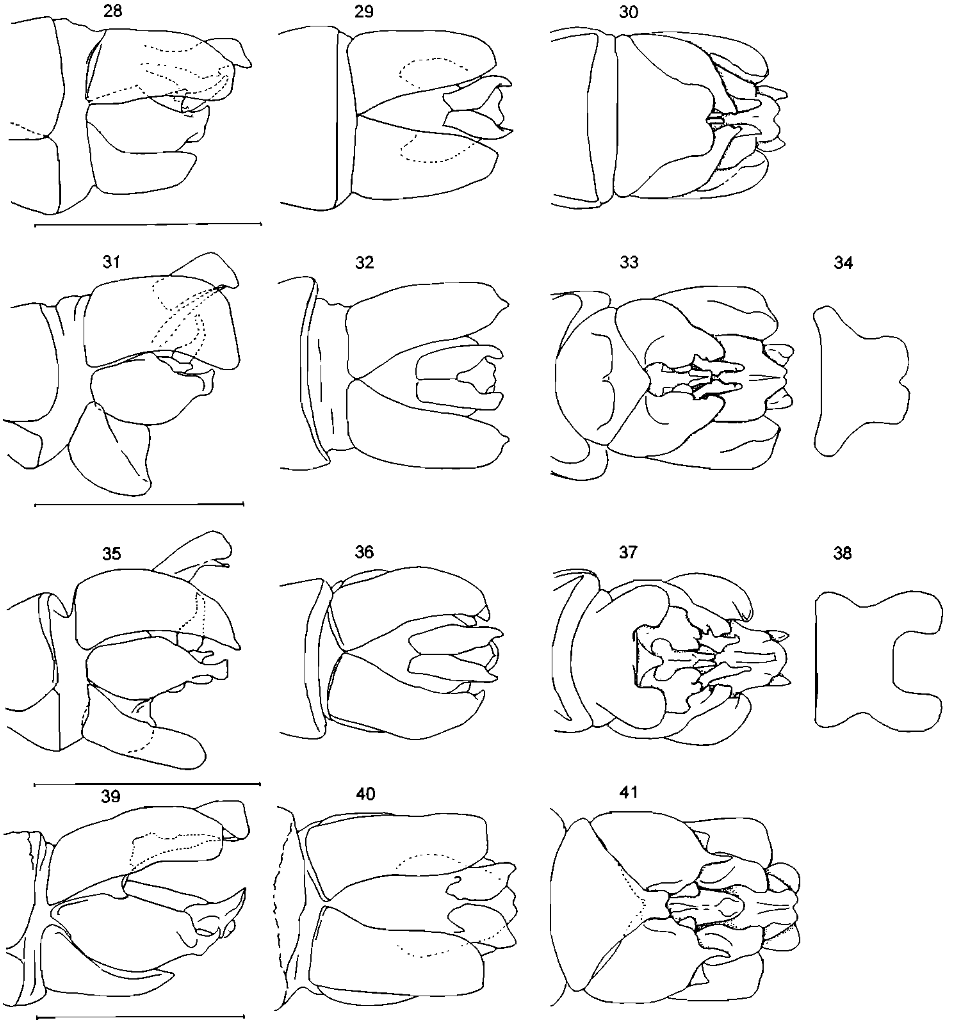


Figs 23–27. *Afroscleropogon* species, showing venation of selected species. 23. *A. armatus* (holotype ♂). 24. *A. braunsi* (holotype ♂). 25. *A. bullingtoni* (paratype ♂). 26. *A. dilutus* (Swartkop ♀). 27. *A. lavignei* (Punda Malia ♂). Scale lines = 1 mm.

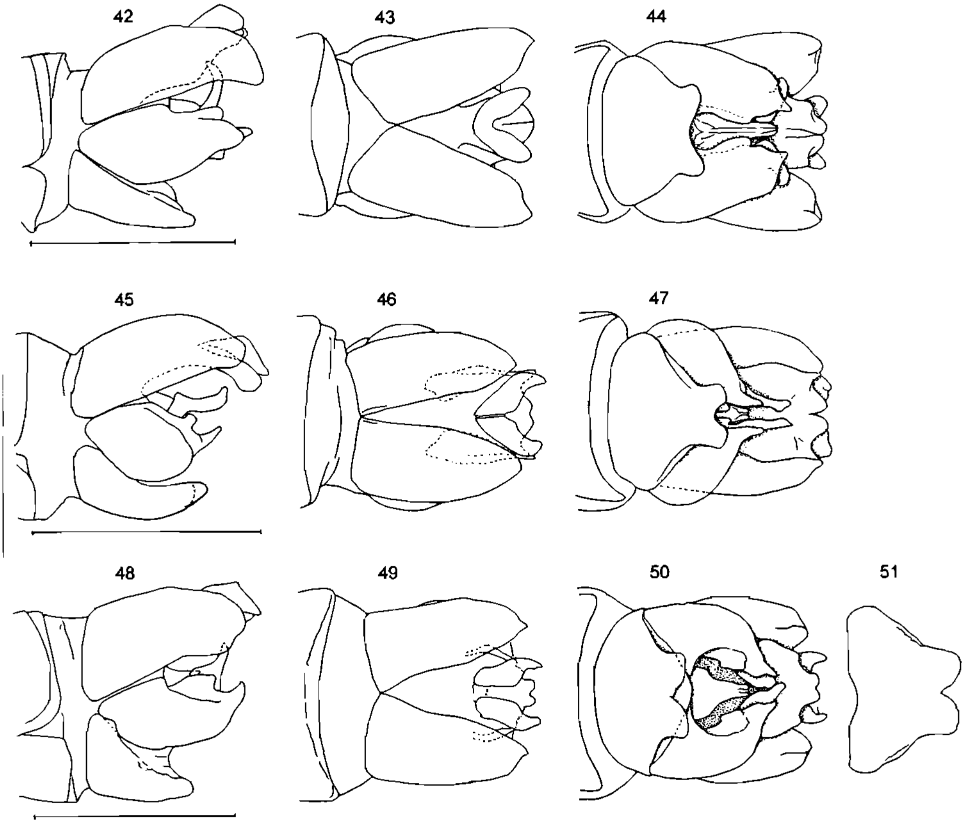
1♀, Grahamstown, Strowan, 9.xii.1968, FW Gess (AMGS); 1♂, Grahamstown, Table Farm, 31.xii.1986, DW Gess (AMGS); 3♂5♀, New Years Dam, 3326AC, Alicedale, 5.xi.1978, R Miller & J Londt, dam margin (NMSA); 1♂, Brak Kloof [33°12'S:26°50'E], ii.1894, Mrs G White (SAMC); 2♂1♀, Brak Kloof, ii.1896, Mrs G White (AMGS); 1♂, Tea Fontein [33°14'S:26°15'E], ii.1896, Miss Leppan (AMGS); 8♂, Port Alfred [33°36'S:26°54'E], 9.i.1971, JGH Londt (NMSA); 1♀, Alicedale [33°19'S:26°07'E], 2.xii.1970, JGH Londt (NMSA); 1♂ **Holotype** [*pygmaeus*], 'S. Afr. Cape Prov. / 20 miles ENE Bredas- / dorp Kars (Salt) River [34°29'S:20°05'E] / 1.i.51, No. 104', 'Swedish South Africa / Expedition / 1950 – 1951 / Brink – Rudebeck', 'Holotype', 'Type / *Stenopogon* / *holoxanthus* Herm. / subs. *pygmaeus* Hull', 'Type No. 1796:1' (MZLU).

– Mystax white; antenna dark brown; head (Figs 11–13) and ♂ genitalia (Figs 39–41) as illustrated .... **clementsi** sp. n.

Material: SOUTH AFRICA: 1♂ **Holotype**, 'Mossel Bay [34°11'S:22°08'E]/ SA Museum' – 'R Turner / 20-11-41' (SAMC). **Etymology**: Named for Alan Clements.



Figs 28–41. *Afroscleropogon* species, showing male genitalia in lateral, dorsal and ventral aspects (additional drawing of hypandrium is supplied, if necessary, to show shape when viewed at right angles). 28–30. *A. armatus* (Platjan ♂). 31–34. *A. braunsi* (paratype ♂). 35–38. *A. bullingtoni* (paratype ♂). 39–41. *A clementsi* (holotype ♂). Scale lines = 1 mm.



Figs 42–51. *Afroscleropogon* species, showing male genitalia in lateral, dorsal and ventral aspects (additional drawing of hypandrium is supplied, if necessary, to show shape when viewed at right angles). 42–44. *A. dilutus* (Port Alfred ♂). 45–47. *A lavignei* (Punda Malia ♂). 48–51. *A. nagatomii* (Putsonderwater ♂). Scale lines = 1 mm.

Haroldia gen. n.

Type species: *Stenopogon trivialis* Oldroyd, 1974, by present designation.

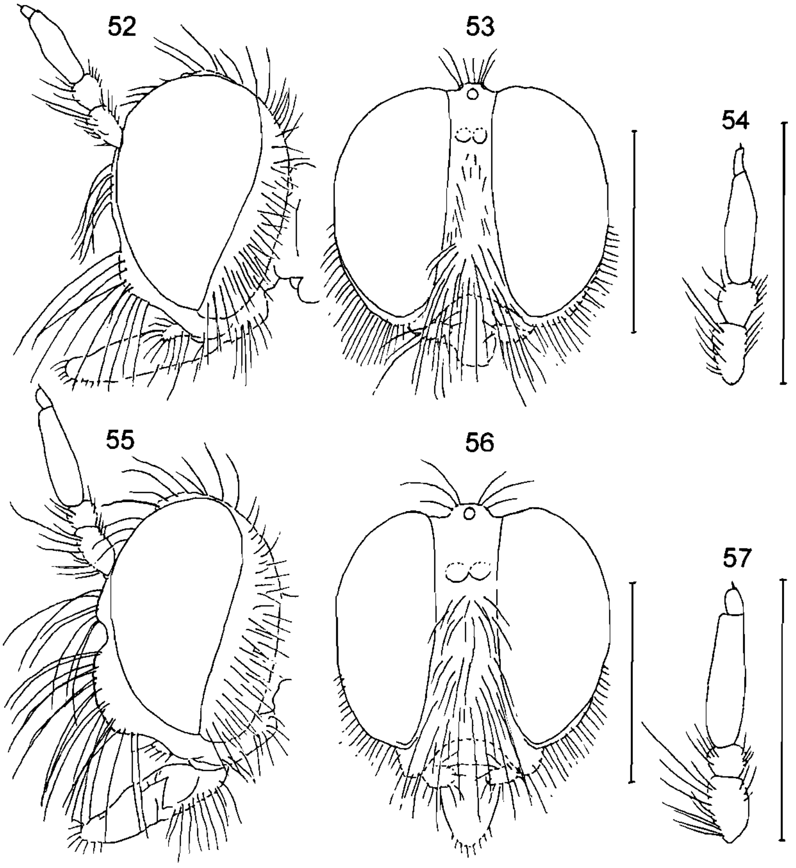
Etymology: Named after Harold Oldroyd whose revisionary studies of afrotropical Asilidae provided me with a wonderful starting point for my work on the family.

Diagnosis: Small, slender Stenopogoninae with the following combination of character states:

Head: Face narrow, such that head appears circular in anterior aspect (i.e. head approximately as wide as high). Mystax with macrosetae arranged in 2 groups, 1 weak group immediately below antennal bases, the other well-developed and above epistomal margin; these groups of setae are borne on 2 gentle protrusions of the face (i.e. slight gibbosities). Antennal style composed of 2 elements (small cylindrical segment and apical spine-like element). Proboscis straight and moderately developed (never robust and curved upwards distally).

Thorax: Dorsocentral macrosetae distributed along entire length of mesonotum. Anatergite and katepisternum asetose. Katatergites with moderately well-developed macrosetae. Scutellum with 2 major marginal macrosetae (may be flanked by 1 or 2 pairs of fine setae). Legs: Prothoracic femur not strongly raptorial (as in *Gonioscelis*); with few fine setae ventrally. Wing: Short (length 4.0–4.5 mm) and broad (width 1.7–1.8 mm); membrane densely covered with dark red-brown microtrichia (never with white microtrichia), giving wing a dark brown appearance. Cell m_3 always open in *trivialis*, but closed in unique type of *oldroydi*; cup usually open or rarely closed on wing margin.

Abdomen: Slender; ♂ genitalia unrotated; hypandrium simple, although very slightly bifurcate distally in *oldroydi*.



Figs 52–57. *Haroldia* species, showing head in lateral and anterior aspects, and lateral aspect of left antenna. 52–54. *H. oldroydi* (holotype ♂). 55–57. *H. trivialis* (Salhanha ♂). Scale lines = 1 mm.

Key to species of *Haroldia*

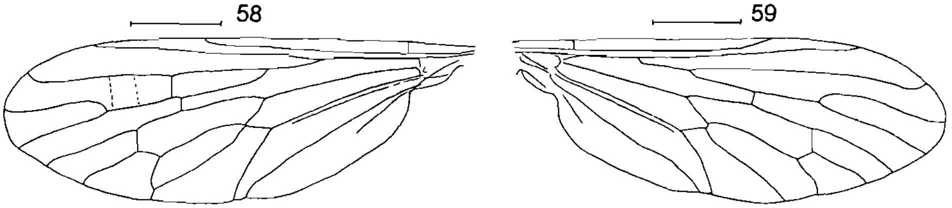
(Species descriptions are supplemented by information contained in Tables 2–3)

1 Cell m_3 open; face clearly bigibbose, with each swelling bearing mystacal setae; abdomen dark red-brown; legs dark red-brown; head (Figs 55–57), wing (Fig. 59) and ♂ genitalia (Figs 63–65) as illustrated........**trivialis** (Oldroyd, 1974), **comb. n.**

Synonymy: *Stenopogon trivialis* Oldroyd, 1974: 75; 1980: 369.
Material: SOUTH AFRICA: 1♂6♀1?, Hondeklipbaai, sea level, 3017AD, 8.ix.1972, ME&BJ Irwin, coastal dunes (NMSA); 1♂ **Holotype** & 1♀ [no type status – pinned together] + 5♂2♀ [no type status], 'South Africa, Cape Prov / 2.5mi. S Elandsbaai, 30ft. / Sept. 16, 1972, 3218Ad / ME&BJ Irwin / Coastal sand dunes', '*Stenopogon* / *trivialis* Oldr. / det. H. Oldroyd 1972 / Holotype ♂' (NMSA); 2♂, 5 mi. W Lambert's Bay, 3218AB, 25ft, 15.ix.1972, ME&BJ Irwin, Coastal sand dunes (NMSA); 1♂, 5 km E Lambert's Bay, 3218AB, 31.viii.1981, J Londt, L Schoeman and B Stuckenberg, Westcoast Strandveld (NMSA); 2♀, S Lambert's Bay on dunes, 28.ix.1977, VB Whitehead (SAMC); 2♂1♀, Leipoldtville [32°13'S:18°29'E] – Elands Bay, x.1947, Mus. Exp. (SAMC); 2♀, Laaiplek, 3319DD [wrong ref. – 32°46'S:18°08'E], 9.x.1977, RM Miller (NMSA); 6♂6♀, Saldanha, 3317BB, 8–9.x.1977, RM Miller (NMSA); 1♂1♀, 14 mi. SE Langebaan, 3318AA, 200 ft, 18.ix.1972. ME Irwin, coastal dunes and sandy plain (NMSA); 3♂, 4.5 mi. S Elandsbaai, 3318AD, 50 ft, 17.ix.1972, ME Irwin, Coastal sand plain (NMSA); 2♂3♀, Hopefield [33°04'S:18°21'E], ix.1960, SAM (SAMC); 3♀, Ysterfontein [= Yserfontein 33°21'S:18°09'E], Atlantic Coast, 20.x.1964, B&P Stuckenberg (NMSA); 1♂3♀, Ysterfontein, ix.1960, SAM (SAMC); 2♂2♀, Blackheath [research station], 3318DC, FW & SH Gess, 9.x.1964 (SAMC); 5♂2♀, 10 km NE Muizenberg, 3418AB, 28.xi.1981, BR Stuckenberg, Coastal Macchia (NMSA); 1♀, Cape Town, Rondevlei Nature Reserve, 34°04'S:18°30'E, 17.x.1993, S van Noort, Strandveld, dominated by *Salvia lutea-africana* & *Chrysanthemoides*, Yellow Pan Trap (SAMC); 4♂4♀, 20 km SW Stellenbosch, 34°04'S:18°43'E, 0 m, 30.x.1991, JGH Londt, coast near Swartklip (NMSA).

– Cell m_3 closed; face slightly bigibbose, with mystacal setae arranged in 2 groups on poorly developed protuberances; abdomen yellow; legs brownish yellow; head (Figs 52–54), wing (Fig. 58) and ♂ genitalia (Figs 60–62) as illustrated .... **oldroydi** sp. n.

Material: SOUTH AFRICA: 1♂ **Holotype**, 'South Africa, Cape Prov / 11mi. NNE Hondeklipbaai / Sept. 8, 1972, 3017Ab, / ME&BJ. Irwin, 22ft. alt- / Reddish sand, shrubs' '*Rhacholaemus* / *variabilis* Hermann / det. H. Oldroyd 1973' (NMSA). **Etymology**: Named after Harold Oldroyd.



Figs 58–59. *Haroldia* species, venation. 58. *H. oldroydi* (holotype ♂; dotted lines indicate position of crossveins in right wing). 59. *H. trivialis* (Lambert's Bay ♂). Scale lines = 1 mm.

Rhacholaemus Hermann, 1907

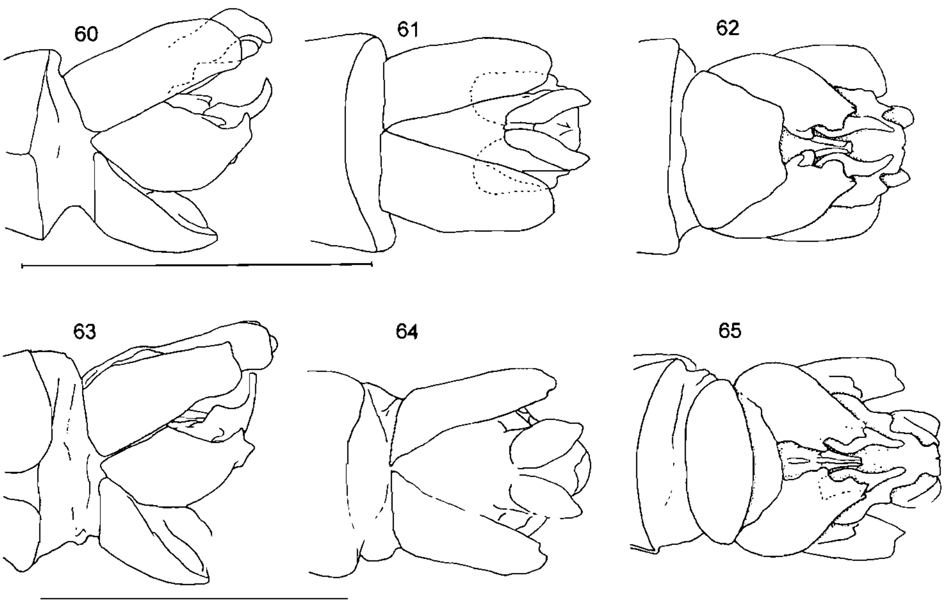
Rhacholaemus Hermann, 1907*a*: 12.

Type-species: *Rhacholaemus variabilis* Hermann, 1907, by original designation.

Diagnosis: Stenopogoninae with the following combination of character states:

Head: Face narrow, such that head appears circular in anterior aspect (i.e. head approximately as wide as high), and not gibbose. Mystax moderately developed ventrally and usually extending weakly to antennal bases. Antennal style composed of 3 elements: a tiny segment (often only seen under high magnification and with good illumination), followed by a much longer cylindrical segment which always bears an apical spine-like element. Proboscis straight, moderately to well developed (never robust and curved upwards distally.

Thorax: Dorsocentral macrosetae confined to posterior half of mesonotum. Anatergite and katepisternum asetose. Katatergites with well-developed macrosetae. Scutellum



Figs 60–65. *Haroldia* species, showing male genitalia in lateral, dorsal and ventral aspects. 60–62. *H. oldroydi* (holotype ♂). 63–65. *H. trivialis* (Lambert's Bay ♂). Scale lines = 1 mm.

with 4–6 marginal macrosetae. Legs: Prothoracic femur not strongly raptorial (as in *Gonioscelis*), with some short macrosetae ventrally. Wing: Covered with microtrichia (never white); m_3 closed and stalked; cup narrowly open or closed on margin. *Abdomen*: ♂ genitalia unrotated; hypandrium usually simple (unilobed), rarely distally bifurcate (apparently as a result of terminal splitting – *tsacasi*) or bilobed (apparently as a result of lateral outgrowths – *nelsoni*).

Key to species of *Rhacholaemus*

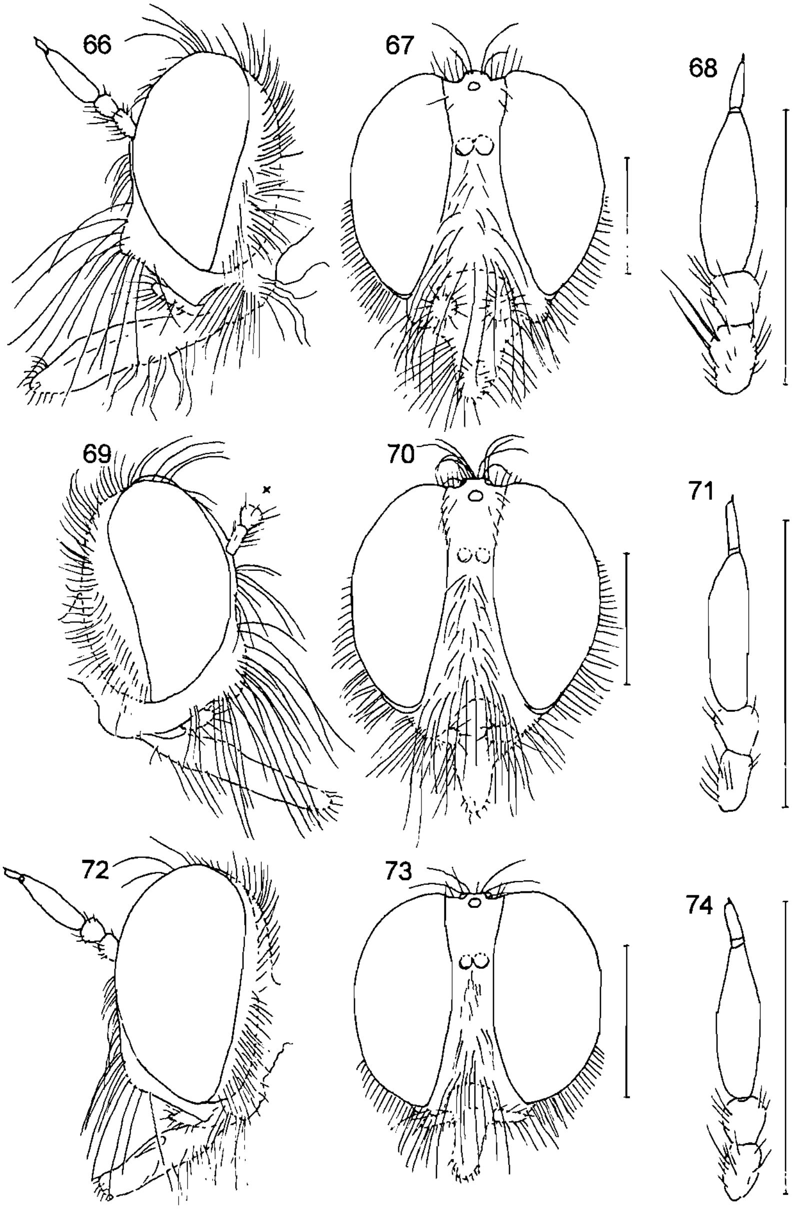
(Species descriptions are supplemented by information contained in Tables 2–3)

1 Epandrial lobes greatly attenuate, jutting out far beyond hypandrium; hypandrium bilobed (due to well-developed lateral lobes); macrosetae of mesonotum and legs usually black; head (Figs 84–86), wing (Fig. 98) and ♂ genitalia (Figs 118–120) as illustrated..**nelsoni** sp. n.

Material: SOUTH AFRICA: 3♂5♀ **Paratypes**, 'Sth Africa: Cape Prov / Richtersveld 2816BD / 40km S of Ochta Mine / Londt & Stuckenberg / 2.ix.1983 Mixed Karoo / bush with few flowers' (NMSA); 1♂ **Paratype**, 'Sth Africa: Cape Prov / Richtersveld 2816DA / 1km E. of Grootderm / 2.ix.1983 J Londt & / B Stuckenberg Foot / of small hill' (NMSA); 1♂2♀ **Paratypes**, 'Sth Africa: Cape Prov / Richtersveld 50km NE / Grootderm 3.ix.1989 / 29°19'00"S:16°55'00"E [29° is incorrect and should read 28°] / J Londt B Stuckenberg / Sandy valley below a / rocky hillside 350m' (NMSA); 2♂ **Paratypes**, 'Klip Vlei [Klipvley – 30°25'S:17°53'E], Garies / Namaqualand' ~ 'Museum Staff / Nov. 1931' (SAMC); 3♂ **Paratypes**, 'South Africa: W. Cape / 10km E. Kamieskroon / 17-x-1977. 3018AA / Ray M. Miller 630m' (NMSA); 4♂6♀ **Paratypes**, 'Papendorp [3118CA]/ Olifants River' ~ 'Mus., Expd., / Oct. 1950.' (SAMC); 1?, Olifants river between Klaver [3118DC] & Clanwilliam (SAMC); 2♂2♀ **Paratypes**, 'South Africa: W.Cape / Strandfontein 3418BA [wrong reference – 31°45'S:18°14'E] / Groot-Sandleegte 10- / 12-x-1977 R.M. Miller' (NMSA); 1♂ **Holotype** 1♂ **Paratype**, 'S Africa: Cape #71 / 1km N of Calvinia / 31°27'S:19°47'E 1000m / Date: 4–5.xi.1991 J.G.H. Londt / Kareedam Nat. Reserve' (NMSA); 1♂ **Paratype**, 'Sth Africa: Cape Prov / 5km N

Nieuwoudtville / 16.xi.1986 3119AC / Londt & Quickelberge / 760m Stream Macchia' (NMSA).
Etymology: Named for C. Riley Nelson.

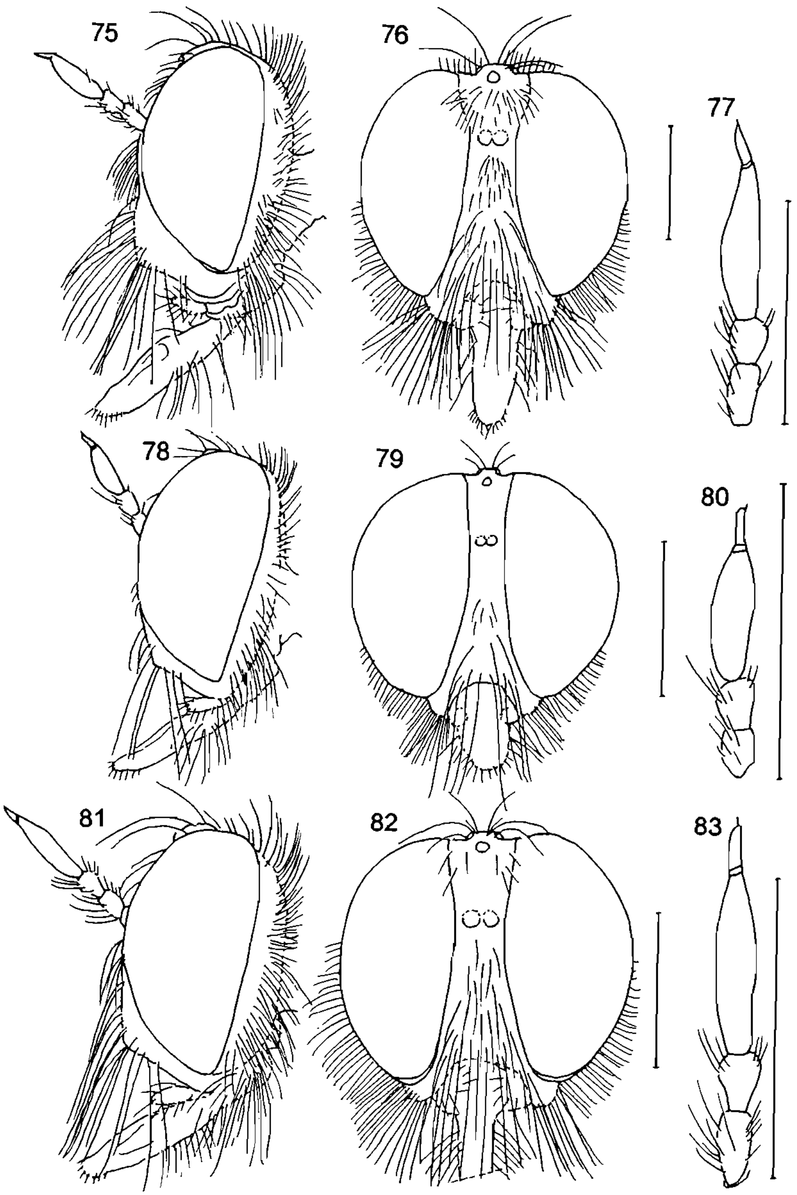
– Epandrial lobes not greatly attenuate; hypandrium simple (lacking distal bifurcation); macrosetae of mesonotum and legs usually whitish, but may be black (*tsacasi*) 2



Figs 66-74. *Rhacholaemus* species – head, lateral and anterior aspects, and lateral aspect of left antenna. 66-68. *R. antigenes* (Renosterrivier ♀). 69-71. *R. artigasi* (paratype ♂). 72-74. *R. fisheri* (holotype ♂). Scale lines = 1 mm.

2 Epistomal margin well developed, forming slight gibbosity and genal 'jowl' (Figs 66, 72, 75, 87) 3

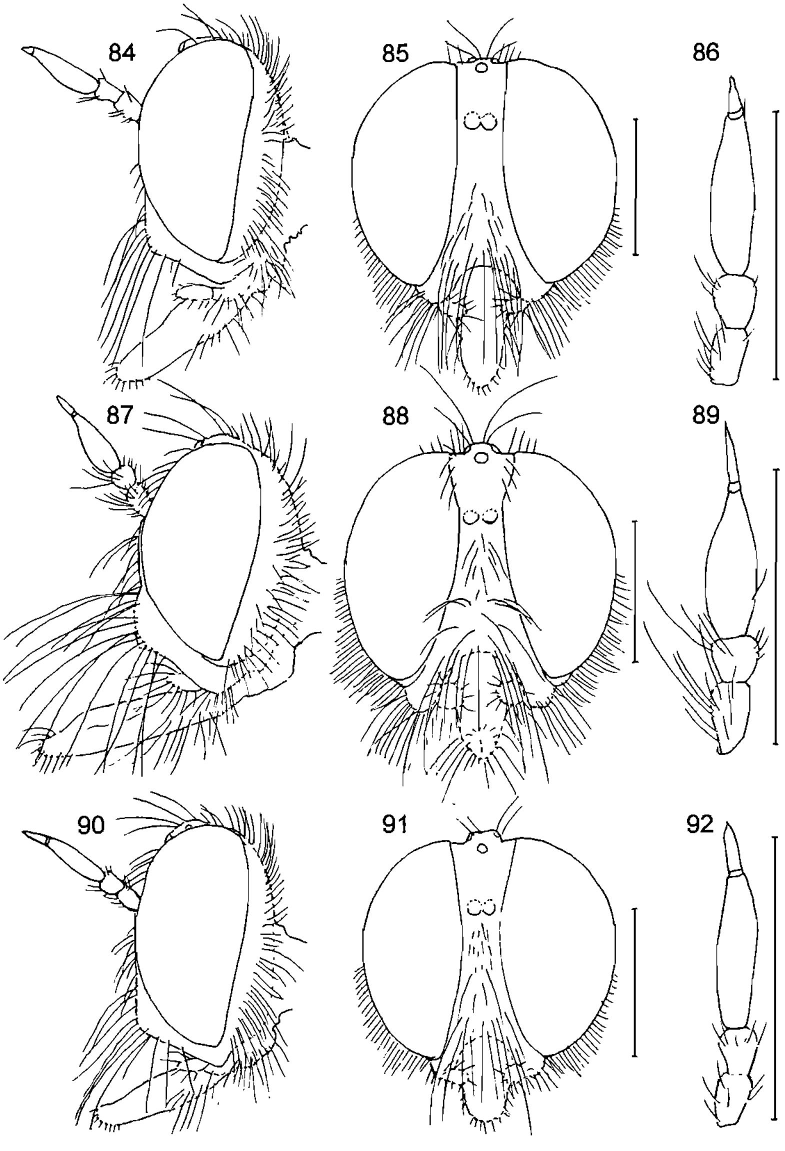
– Epistomal margin poorly developed, face flat and genal 'jowl' weakly developed (Figs 72, 78, 81, 90) 6



Figs 75–83. *Rhacholaemus* species, showing head in lateral and anterior aspects, and lateral aspect of left antenna. 75–77. *R. grimmi* (holotype ♂). 78–80. *R. hradskyi* (paratype ♂). 81–83. *R. josephi* (paratype ♂). Scale lines = 1 mm.

3 Abdominal macrosetae strongly developed on all terga and sterna; all macrosetae of head, thorax and abdomen well developed and white; ♂ with basal part of wing transparent and without a milky appearance; proboscis moderately developed; head (Figs 69–71) and ♂ genitalia (Figs 103–105) as illustrated .....**artigasi** sp. n.

Material: SOUTH AFRICA: 1♂ **Holotype** 2♂4♀ **Paratypes**, '18m. E. / of Touws R. [33°20'S:20°02'E] to / Hondewater' ~ '12.1962. / S.A.M.' (SAMC; 1♂1♀ **paratypes** NMSA); 1♂ **Paratype**, 'Oudtshoorn – / Zebra [33°45'S:22°19'E] / C. P.' ~ 'Mus., Expd., / Oct. 1951.' (SAMC).
Etymology: Named for Jorge Artigas.



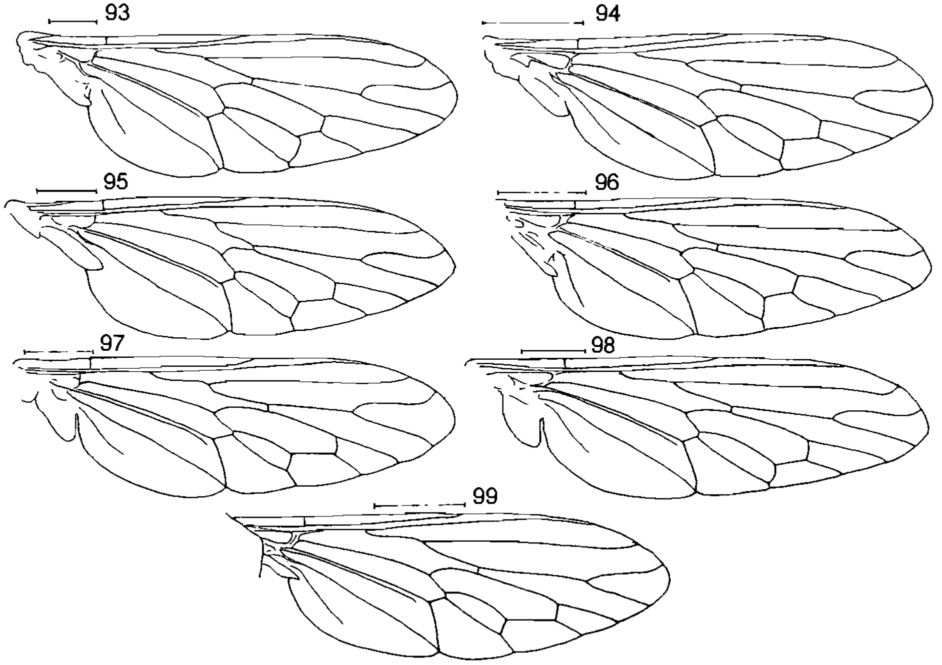
Figs 84–92. *Rhacholaemus* species, showing head in lateral and anterior aspects, and lateral aspect of left antenna. 84–86. *R. nelsoni* (holotype ♂). 87–89. *R. tsacasi* (paratype ♂). 90–92. *R. variabilis* (lectotype ♂). Scale lines = 1 mm.

– Abdominal macrosetae weakly developed (if moderately well developed then macrosetae of mesonotum and legs mostly black); ♂ with at least basal part of wing milky due to the presence of white microtrichia on membrane; proboscis well developed 4

4 Mesonotal macrosetae black; head (Figs 87–89) and ♂ genitalia (Figs 121–123) as illustrated ....**tsacasi** sp. n.
Material: SOUTH AFRICA: 1♂ **Holotype** 2♂3♀ **Paratypes**, 'Leipoldtville [32°13'S:18°29'E] / – Eland's Bay / C. P.' ~ 'Mus., Exp., / Nov. 1948' (SAMC; 1♂1♀ **paratypes** NMSA); 2♂1♀ **Paratypes** 1?, 'Leipoldtville / S.A.M. 11-56' (SAMC). **Etymology**: Named for Leonidas Tsacas.

– Mesonotal macrosetae whitish or pale yellowish 5

5 Wing membrane of ♂ entirely, or almost so, milky white; ♂ gonostylus thick-set and strongly upcurved distally; head (Figs 66–68), wing (Fig. 93) and ♂ genitalia (Figs 100–102) as illustrated..........................**antigenes** (Walker, 1849), **comb. n.**
Synonymy: *Dasypogon antigenes* Walker, 1849: 312; *Habropogon antigenes*, Hull 1962: 207; *Stenopogon antigenes*, Oldroyd 1974: 79, 1980: 369.
Material: SOUTH AFRICA: 1♂ **Holotype**, 'Dr. Smith / S. Afr. 44-6', 'Type / *Dasypogon / antigenes* / Wlk', 'Holotype / *Dasypogon / antigenes* Walker / det J.E. Chainey, 1983' (BMNH); 1♀, 10 km E Port Nolloth, 2916BD, 9.ix.1982, LE Schoeman (NMSA); 4♂4♀, Btw Kamieskroon and Springbok [29°40'S:17°53'S], x.1939, Mus. Staff (SAMC); 1♂, Springbok, xi.1890, R Lightfoot (SAMC); 1♀, O'okiep [29°36'S:17°52'E], 19.xi.1885 (SAMC); 1♀, Wallekraal, 3017BC, 25.x.1986, LE Schoeman (NMSA); 1♀, Klipfont [probably Klipfonteinberg 29°14'S:17°40'E], xi.1885 (SAMC); 1♀, Bushmanld, Jackals Water [2917BB], x.1891, Lightfoot (SAMC); 2♂, Bowesdorp [30°09'S:17°52'E], xi.1931, Museum staff (SAMC); 1♂2♀, Kamieskroon [30°12'S:17°56'E], ix.1936, Museum staff (SAMC); 1♀, 13 km NW Carnarvon, V. Wyksvlei Rd, 3022CC, 1260 m, 14.xi.1986, Londt & Quickelberge, Dry riverbed *Acacias* (NMSA); 1♂, Knersvlakte north of Van



Figs 93–99. *Rhacholaemus* species, venation of selected species. 93. *R. antigenes* (Renosterrivier ♂). 94. *R. fisheri* (holotype ♂). 95. *R. grimmi* (holotype ♂). 96. *R. hradskyi* (paratype ♂). 97. *R. josephi* (paratype ♂). 98. *R. nelsoni* (paratype ♂). 99. *R. variabilis* (lectotype ♂). Scale lines = 1 mm.

Rhynsdorp [31°37'S:18°44'E], 6–9.x.1964, B&P Stuckenberg (NMSA); 1♂, 43 km SE Middelpos, 31°58'S:20°35'E, 1270 m, 28.xi.1990, Londt & Whittington, Near Renosterrivier (NMSA); 1♀, 8 km W Williston, 31°20'48"S:20°50'52"E, 1080 m, 10.xi.1998, JGH Londt, Karoo vegetation at foot of rocky ridge (NMSA); 3♂, 10 km W Williston, 3120BD, 1060 m, 15.xi.1986, Londt & Quickelberge, Sand / *Acacias* (NMSA); 7♂4♀, 18 km N Sutherland, 32°16'S:20°41'E, 1350 m, 26.xi.1990, Londt & Whittington, Renosterrivier area (NMSA); 2♀, 15 km E Sutherland, 32°23'S:20°48'E, 1600 m, 26.xi.1990, Whittington & Londt, Valley nr Observatory (NMSA); 1♂1♀, Renoster River Area, 18 km N Sutherland, 32°15'10"S:20°41'39"E, 1290 m, 7.xi.1998, J&B Londt, Karoo Macchia (NMSA).

– Wing membrane of ♂ milky white only in basal half; ♂ gonostylus only moderately developed and upcurved distally; head (Figs 75–77), wing (Fig. 95) and ♂ genitalia (Figs 109–111) as illustrated .... **grimmi** sp. n.

Material: SOUTH AFRICA: 1♂ **Holotype** 5♂6♀ **Paratypes**, 'Sth Africa: Cape Prov / Swartkop 31km NW of / Sutherland 3220BA / Londt & Quickelberge / 18–19.xi.1986 1600m / Rocks Woody macchia' (NMSA); 4♀ **Paratypes**, 'Sth Africa: Cape Prov / 18km E of Sutherland / (Observatory) 3220BD / 18.xi.1986 1700m / Quickelberge & Londt / Rocky hillside bush' (NMSA); 1♂ **Paratype**, 'Sth Africa: Cape Prov / 20km S of Sutherland / Verlatekloof 3220DA / Quickelberge & Londt / 19.xi.1986 1550m / Rocks Woody macchia' (NMSA); 1♀ **Paratype**, 'Sth Africa: Cape Prov / 10km S of Sutherland / Swaarweerberg 3220BC / Londt & Quickelberge / 19.xi.1986 1600m / Rocks Woody macchia' (NMSA); 1♀, Mountain Zebra Nat Park, 3225AD, 17–21.xii.1985, JGH Londt, Bushveld vegetation (NMSA); 6♂5♀, Verkeerde Vlei [33°20'S:19°52'E], xii.1962, SAM (SAMC). **Etymology**: Named for Fritz Geller-Grimm.

6 Macrosetae of mesonotum, legs and abdomen black; head (Figs 78–80), wing (Fig. 96) and ♂ genitalia (Figs 112–114) as illustrated .... **hradskyi** sp. n.

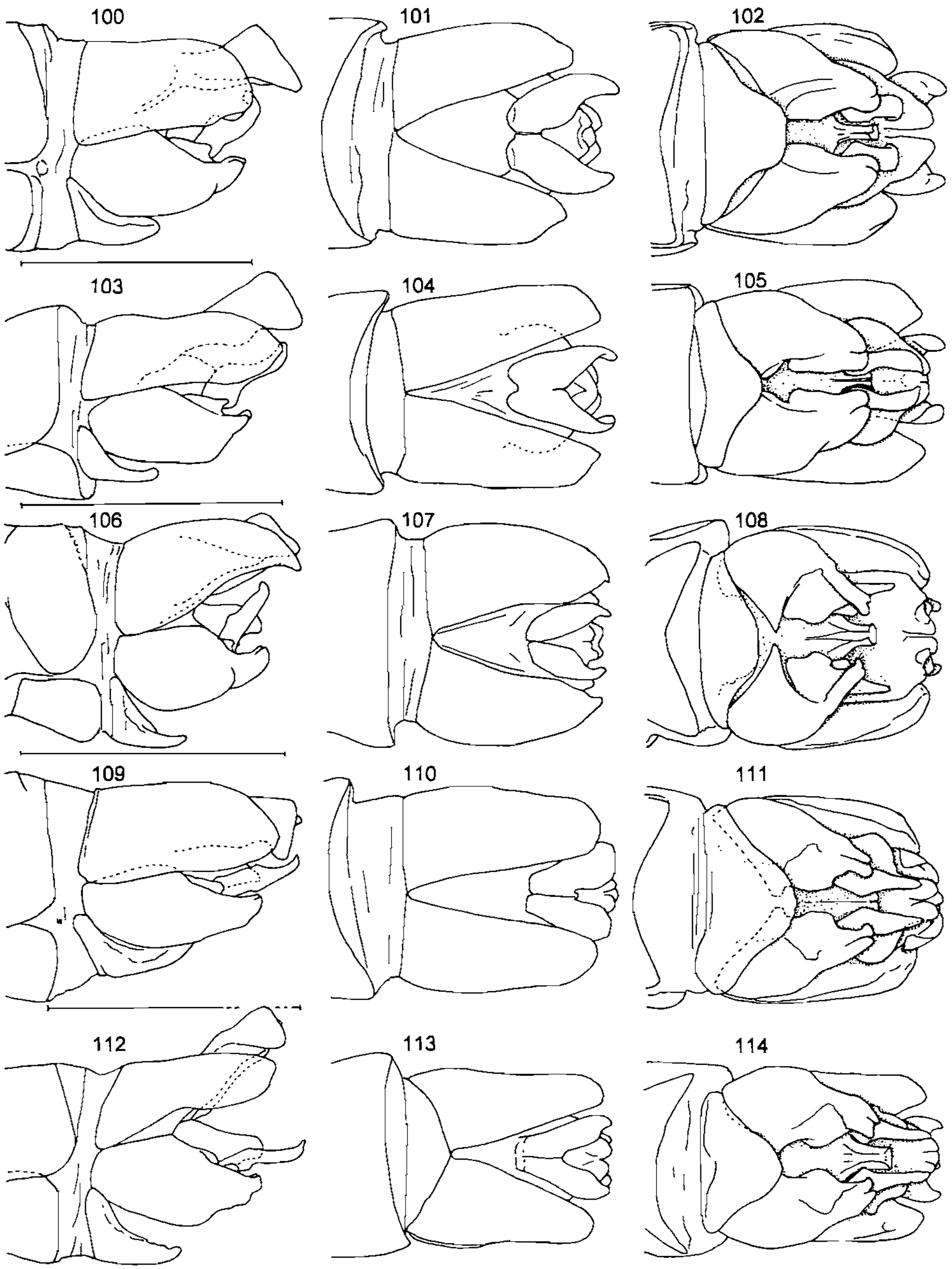
Material: SOUTH AFRICA: 1♀, **Paratype**, 'Liebendal [31°36'S:18°24'E] / S.A.M. 11-56' (SAMC); 2♂ **Paratypes**, 'Sth Africa: Cape Prov / ca 30km SW Middelburg / on Graaff Reinet road / 31°45'S:24°55'E 1450m / J&H Londt 9.xii.1989' (NMSA); 1♂ **Paratype**, 'Bulshoek [32°01'S:18°47'E] Clw, / S.A.M. 12-56' (SAMC); 4♂1♀ **Paratypes**, 'Sth Africa: Cape Prov / Graaff – Reinet / Urquhart Park Caravan / Park 4–6.xii.1988 / 32°15'S:24°33'E / JGH Londt Riverine / veget. Sandy ground' (NMSA); 2♂ **Paratypes**, 'Sth Africa: Cape Prov / Karoo Nature Reserve / West of Graaff Reinet / 32°14'S:24°29'E 900m / J&H Londt Rocky slope / Savannah 7–8.xii.1989' (NMSA); 1♂1♀ **Paratypes**, 'Sth Africa: Cape Prov / Diepkloof ca 20km E / De Rust 3322BD / 12.xii.1979 J. Londt / & B. Stuckenberg Dry / rocky hillside & stream' (NMSA); 1♂ **Paratype**, 'S Africa: Cape #10 / 4km NE Steytlerville / 33°18'S:24°23'E 600m / Date: 22.xi.1990 / Londt & Whittington / Noorspoort Hillside' (NMSA); 1♂ **Holotype** 9♂7♀ **Paratypes**, 'S Africa: Cape #7 / 6km E of Alicedale / 33°19'S:26°07'E 600m / Date: 21.xi.1990 / Whittington & Londt / New Years Dam area' (NMSA); 1♀ **Paratype**, 'South Afr: Cape Prov / Clifton Farm 22km NW / Grahamstown 3326AB / 3&5.i.1986 J&B Londt / & D Gess. Arid area' (NMSA); 1? [incorrect abdomen attached], Grahamstown, Resolution [33°10'S:26°37'E], 1929, Miss Walton (SAMC). **Etymology**: Named for Milan Hradsky.

– Macrosetae of mesonotum, legs and abdomen whitish or pale yellowish 7

7 ♂ dull black (i.e. with very little hint of orange or brown coloration and only weakly silver pruinose); postpronotal lobes blackish like mesonotum; legs, especially femora, dark red-brown to black; head (Figs 90–92), wing (Fig. 99) and ♂ genitalia (Figs 124–126) as illustrated .... **variabilis** Hermann, 1907

Synonymy: *Rhacholaemus variabilis* Hermann, 1907: 13; Hull, 1962: 127–8; Oldroyd, 1974: 69; 1980: 367; *Stenopogon atrox* Oldroyd, 1974: 77; 1980: 369 (**Syn.n.**); *Stenopogon confrontus* Oldroyd, 1974: 77; 1980: 369 (**Syn.n.**).

Material: SOUTH AFRICA: 2♂, Verkeerde Vlei [30°19'S:22°01'E], xii.1962, SAM (SAMC); 1♂1♀, 56 km N Beaufort West (Loxton Rd), 3122CD, 1520 m, 13.xi.1986, Londt & Quickelberge, Flat Karoo Scrubland (NMSA); 5♂4♀, Murraysburg [31°57'S:23°46'E] Dist., xi.1935, Museum Staff (SAMC); 3♂, 18 km N Sutherland, 32°16'S:20°41'E, 1350 m, 26.xi.1990, Londt & Whittington, Renosterrivier area (NMSA); 1♂, Renoster River Area, 18 km N Sutherland, 32°15'10"S:20°41'39"E, 1290 m, 7.xi.1998, J&B Londt, Karoo Macchia (NMSA); 7♂5♀, Tankwa Karoo, Waterval [32°35'S:20°25'E], xi.1952, Mus. Expd. (SAMC); 1♂, Merweville [32°40'S:21°31'E], Koup, Dikbome, x.1952, Mus. Expd. (SAMC); 1♀, Beaufort West [32°21'S:22°35'E], Nieuwveldt, xi.1935, Mus. Staff (SAMC); 3♂3♀, 8 km NE Touws R.



Figs 100–114. *Rhacholaemus* species, showing male genitalia in lateral, dorsal and ventral aspects. 100–102. *R. antigenes* (Renosterrivier ♂). 103–105. *R. artigasi* (paratype ♂). 106–108. *R. fisheri* (paratype ♂). 109–111. *R. grimmi* (paratype ♂). 112–114. *R. hradskyi* (paratype ♂). Scale lines = 1 mm.

[33°20'S:20°02'E], xii.1962, SAM (SAMC); 1♂, 18 km E Touws R. to Hondewater, xii.1962, SAM (SAMC); 1♂, 26 km SE Laingsburg, 33°21'S:20°56'E, 700 m, 25.xi.1990, Londt & Whittington, Buffels River area (NMSA); 1♂, Gamka's Poort [3321BC], x.1952, Mus. Expd. (SAMC); 6♂6♀, 6 km S Prince Albert, 3322AA, 780 m, 10.xi.1986, Londt & Quickelberge, Sand / Acacias (NMSA); 1♂, Meiringspoort, 3322BC, 11–12.xii.1979, Londt & Stuckenberg, Rocky hillside & stream edge (NMSA); 1♂ **Lectotype** 1♂ **Paralectotype**, 'Willowmore [33°17'S:23°30'E] / Capland / Dr. Brauns', 'Sammlung / F. Hermann', 'Type von ♂ / *Rhacholaemus* / *variabilis* / Hermann' / '*Rhacholaemis* / *variabilis* Herm. / det. E.O. Engel' (ZSMC); 1♂ **Paralectotype**, 'Willowmore / Capland / Dr. Brauns', 'Type von ♂ / *Rhacholaemus* / *variabilis* / Hermann' / 'Transvaal / *Rhacholämus* / *variabilis* / Type Hr.' / '*Rhacholaemis* / *variabilis* Herm. / det. E.O. Engel' (ZSMC); 1♀ **Paralectotype**, 'Sammlung / F. Hermann', 'Type von / *Rhacholaemus* / *variabilis* / Hermann ♀' / '*Rhacholaemis* / *variabilis* Herm. / det. E.O. Engel' (ZSMC); 1♂ **Holotype** [*S. atrox*], 'Capland / Willowmore / 1.xii.1920 / Dr. Brauns', '3058 / 4', 'Collection / Transvaal / Museum', '*Stenopogon* / *atrox* Oldr. / det. H. Oldroyd 1972 / Holotype' (NMSA); 1♂ **Paratype** [*S. atrox*], 'Willowmore / Capland / 10 11 09 [10.xi.1909] / Dr. Brauns', 'Collection / Transvaal / Museum', '2', '*Stenopogon* / *atrox* Oldr. / det. H. Oldroyd 1972 / Paratype' (NMSA); 1♀ **Holotype** [*S. confrontus*], 'Engel / 1', 'Willowmore / Capland / D. Brauns', 'Collection / Transvaal / Museum', '*Stenopogon* / *confrontus* Oldr. / det. H. Oldroyd 1972 / Holotype' (NMSA); 1♀ **Paratype** [*S. confrontus*], 'Capland / Willowmore / 1.xii.1920 / Dr. Brauns', '3063 / 3', 'Collection / Transvaal / Museum', '*Stenopogon* /*confrontus* Oldr. / det. H. Oldroyd 1972 / Paratype' (NMSA); 1♂ **Paratype** [*S. atrox*], 'Capland / Willowmore / 1.xii.1920 / Dr. Brauns', 'Collection / Transvaal / Museum', '*Stenopogon* / *atrox* Oldr. / det. H. Oldroyd 1972 / Paratype' (NMSA); 1♂1? **Paratypes** [*S. atrox*], 'Resolution [33°10'S:26°37'E] / Albany Distr / 8.i. & 19.xii.1928 / A. Walton', 'Collection / Transvaal / Museum', '*Stenopogon* / *atrox* Oldr. / det. H. Oldroyd 1972 / Paratype' (NMSA).

– ♂ not dull black (i.e. body with some orange or brown parts and pruinescence sometimes forming distinct patterns); postpronotal lobes yellow-brown (contrasting with blackish mesonotum); legs with orange-brown parts 8

8 Mesonotum with strong patterning as a result of clearly demarcated areas of silver and dull brown pruinescence; abdominal pruinescence strong and with a somewhat pinkish appearance when viewed under bright light; hind legs dark red-brown; head (Figs 81–83), wing (Fig. 97) and ♂ genitalia (Figs 115–117) as illustrated ....**josephi** sp. n.

Material: SOUTH AFRICA: 1♂ **Holotype** 8♂8♀ **paratypes**, 'Vryburg [26°57'S:24°44'E] / Griqualand / West' ~ 'Mus Staff / Oct. 1939' (SAMC; 1♂1♀ **paratypes** NMSA); 1♀ **Paratype**, 'Kuruman [27°28'S:23°26'E] / Griqualand / West / SA Museum' ~ 'Mus Staff / Oct. 1939' (SAMC); 2♂1♀ **Paratypes**, 'Colesberg [30°44'S:25°06'E] / C P' ~ 'Mus Staff / Nov. 1939' (SAMC); 1♂ **Paratype**, 'Richmond [31°25'S:23°56'E] / Dist C P' ~ 'Mus Staff / Nov. 1939' (SAMC); 1♂2♀ **Paratypes**, 'Middelburg [31°29'S:25°01'E] / Div' ~ 'Mus Staff / Nov. 1935' (SAMC). **Etymology**: Named for A. N. T. Joseph.

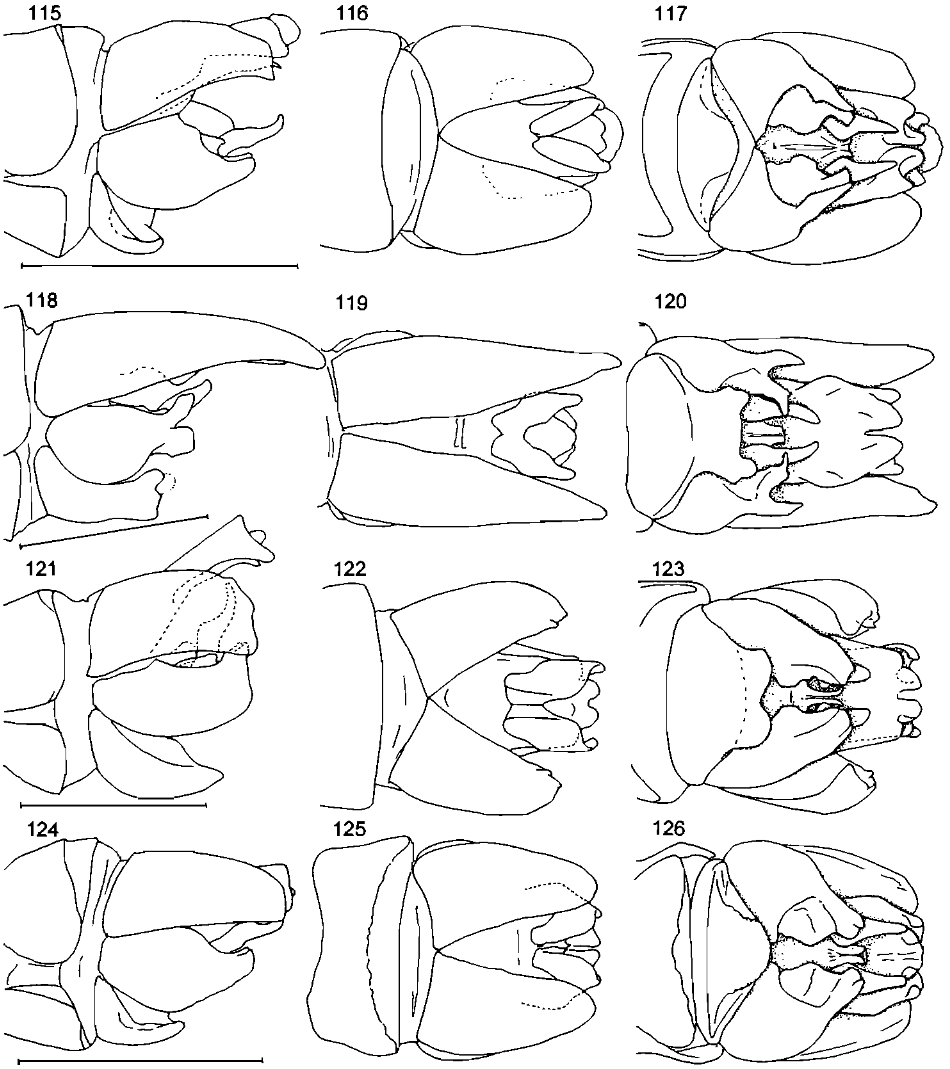
– Mesonotum weakly gold pruinose and not with clear patterning; abdominal pruinescence weak, dull goldish; hind legs brownish yellow; head (Figs 72–74), wing (Fig. 94) and ♂ genitalia (Figs 106–108) as illustrated..............**fisheri** sp. n.

Material: NAMIBIA: 1♀, Rosh Pinah [2716DD], 18.vi.1975, VB Whitehead (SAMC). SOUTH AFRICA: 1♂ **Holotype** 6♂3♀ **paratypes**, 'Sth Africa: Cape Prov / 40km SE of Calvinia / Middelpos Rd 3120CA / 17.xi.1986 1240m / Londt & Quickelberge / Dry woody scrubland' (NMSA); 1♀ **Paratype**, 'S Africa: Cape #35 / 23km N of Middelpos / 31°44'S:20°14'E 1170m / Date: 29.xi.1990 / Whittington & Londt / At Kookfontein River' (NMSA); 1♂ **Paratype**, 'Sth Africa: Cape Prov / 1km N of Middelpos / 3120CC 17.xi.1986 / Londt & Quickelberge / 1190m At edge of dam' (NMSA). **Etymology**: Named for Eric Fisher.

Stenopogon Loew, 1847

Stenopogon Loew, 1847*b*: 453 (as subgenus of *Dasypogon*).

Type-species: *Asilus sabaudus* Fabricius, 1794, by designation of Rondani (1856: 158).



Figs 115–126. *Rhacholaemus* species, showing male genitalia in lateral, dorsal and ventral aspects. 115–117. *R. josephi* (paratype ♂). 118–120. *R. nelsoni* (paratype ♂). 121–123. *R. tsacasi* (paratype ♂). 124–126. *R. variabilis* (paralectotype ♂). Scale lines = 1 mm.

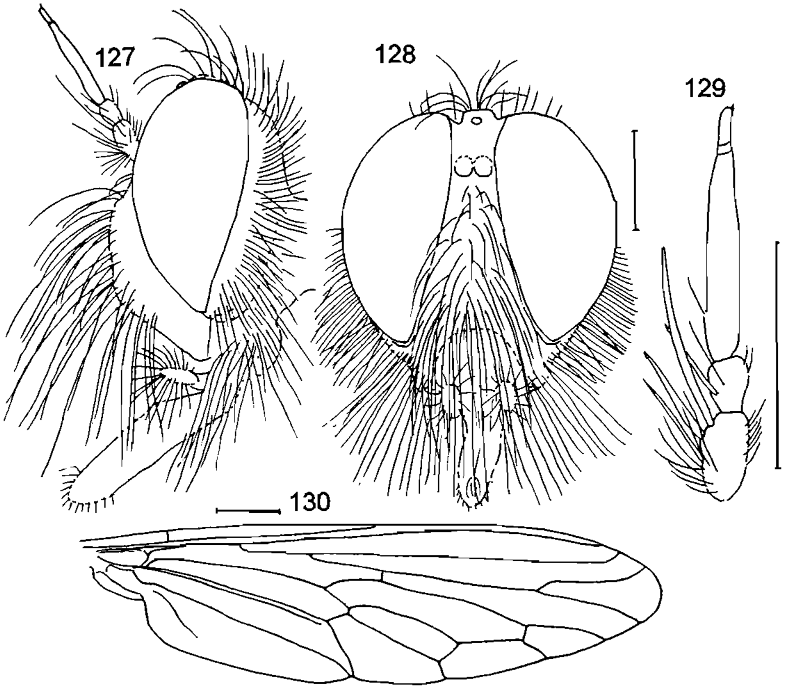
Stenopogon lehri sp. n.

Figs 127–133

Etymology: Named for Dr P. A. Lehr, in recognition of his significant contribution to our understanding of palaearctic Asilidae and as a token of my thanks for the many publications he has sent me over a number of years.

Description: Based primarily on holotype ♂. Description supplemented by information contained in Tables 2–3.

Head (Figs 127–128): Dark red-brown, setae pale yellow-white, face gold-silver pruinose, occiput silver pruinose. Antenna (Fig. 129): Dark red-brown, macrosetae of scape and pedicel well-developed, postpedicel with single proximoventral seta [absent in paratypes]; style composed of 3 elements (a small basal segment, a much larger gradually tapering cylindrical segment, and a tiny apical, conical spine-like element). Face with well-defined gibbosity occupying approximately three-quarters of area between epistomal margin and antennal bases. Mystax composed of many strong macrosetae. Palpi 2-segmented, with terminal pit. Proboscis straight, well-developed.

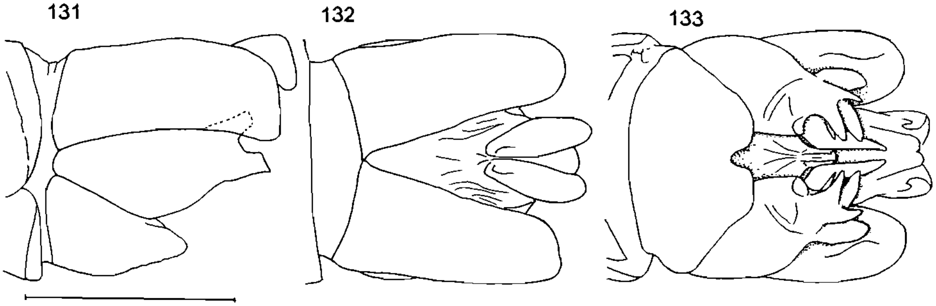


Figs 127–130. *Stenopogon lehri* sp. n. 127–128 (holotype ♂). Head. 127. Lateral. 128 Anterior. 129. Antenna (lateral aspect of left antenna). 130. Wing venation (paratype ♂). Scale lines = 1 mm.

Thorax: Dark brown, entirely dull silver-gold pruinose, macrosetae pale yellow-white (although basal parts often brownish). Mesonotum: Postpronotal lobes orange-brown with *ca.* 8 strong macrosetae plus smaller setae. Dorsocentrals extend from hind margin to just anterior to transverse suture. Lateral mesonotal macrosetae numerous and well developed. Scutellum with 4 marginal macrosetae. Pleura: Anapleuron, katatergite and katepisternum asetose. Halter: Pale brownish yellow. Wing (Fig. 130) 10.0 mm long, 3.5 mm wide; venation typical of genus: m_3 closed and stalked, cup narrowly open at wing margin. Membrane extensively covered with microtrichia giving wing a slight brownish appearance. Legs: Mostly dark red-brown, posterior parts of femora orange-brown. Setae and macrosetae pale yellowish white.

Abdomen: Elongate (segments 6 to tip extend beyond level of closed wings); terga dark red-brown, somewhat orange-brown posterolaterally; setae well-developed, especially laterally on T1–3. Genitalia as illustrated (Figs 131–133); hypandrium weakly bifurcate distally.

Variation: Little individual or sexual variation evident. Some of the Kenyan paratypes, and the paratypes from Somalia, are smaller that the holotype (smallest having a wing length of 7.3 mm).



Figs 131–133. *Stenopogon lehri* sp. n. Male genitalia (paratype ♂). 131. Lateral. 132. Dorsal. 133. Ventral. Scale lines = 1 mm.

Material: KENYA: 1♂ **Holotype** 3♂3♀ **Paratypes**, 'Kenya #2 / Nguruma, Kajiado dist / 01°50'S:36°56'E 700m / viii.1989, Rift valley / Coll: I.M.I. Abu-Zinid / Alluvial plains' (NMSA); 1♀ **Paratype**, 'Kenya #2 / Nguruma, Kajiado dist / 01°50'S:36°56'E 700m / ix.1989, Rift valley / Coll: I.M.I. Abu-Zinid / Alluvial plains' (NMSA); 1♂ **Paratype**, 'Kenya, Nguruman, / near Sampu River / 1°54.04'S, 36°02.71'E / Malaise trap, 6–8.x.98 / R. Copeland' (NMSA); 1♀ **Paratype**, 'Nguruman, Kenya / Ewaso Ngiro swamp / 29 Aug 1997 / R. S. Copeland' (NMSA); 1♂1♀ **Paratypes**, 'Nguruman, Kenya / *Acacia* woodland / 11.ix.96 / R. Copeland' (NMKE); 1♂, 'Nguruman, Kenya / *Acacia* woodland / 12.viii.96 / R. Copeland' (Copeland Collection). SOMALIA: 2♀ **Paratypes**, 'Somalia / Warable [a subvillage of Calio Doyow - 02°55'N:43°49'E] / xi-30 & xii-8-85 / R. Lavigne' (NMSA).

Remarks: As already mentioned, my research on the afrotropical species previously assigned to *Stenopogon* has demonstrated that none belong in the genus, but are digeneric (terminology of Londt 1993*b*). *S. lehri* is, however, justifiably allocated to the genus. In comparing *lehri* with the genotype, *S. sabaudus* (Fabricius, 1794), and other palaearctic and nearctic representatives available to me, I am only able to find very poor grounds for not including *lehri* in *Stenopogon*. Features which could support isolation of *S. lehri* include its four scutellar macrosetae (*sabaudus*, and virtually all other foreign examples seen, usually have eight) and the bare katepisterna (*sabaudus*, and other foreign species, have finely setose katepisterna). The palaearctic *Stenopogons* require modern revision and it would be imperative to include *lehri* in such a study.

DISCUSSION AND CONCLUSIONS

Identification of afrotropical Stenopogoninae

The following key to all 38 afrotropical genera is an updated version of that published by Londt (1994*b*) and includes *Oxynoton* as well as the genera described in this paper.

Key to genera of afrotropical Stenopogoninae

1 Anatergites setose 2

– Anatergites bare 8

2 Antennal segment 3 (postpedicel) with distinct well-developed style (microsegment) 3

– Postpedicel tipped with a small pit enclosing a tiny seta, style absent 7

3 Occiput without macrosetae (weak setae only) 4

– Occiput with macrosetae (weak setae also) 5

4 Eye:face width ratio < 1.1:1; scape clearly longer than pedicel; ♂ hypandrium < half as long as epandrial lobes (1 species – Londt 1983) .... **Dioctobroma** Hull

– Eye:face width ratio > 1.3:1; scape and pedicel about equal in length; ♂ hypandrium about as long as epandrial lobes (2 species – Londt 1983) .... **Dogonia** Oldroyd

5 Propleuron with a few well-developed macrosetae as well as fine setae; ♂ hypandrium very short, about one-quarter length of epandrial lobes (1 species – Londt 1983) .... **Anasillomos** Londt

– Propleuron with fine setae only; ♂ hypandrium at least half length of epandrial lobes 6

6 Facial swelling well-defined in dorsal part; eye:face width ratio > 1.2:1 (2 species – Londt 1983 1985*a*) .... **Oratostylum** Ricardo

– Facial swelling not well-defined in dorsal part; eye:face width ratio < 1.2:1 (3 species – Londt 1983) .... **Remotomyia** Londt

7 Facial swelling occupying about three-quarters of face and entirely covered with macrosetae and setae; presutural dorsocentral setae well developed; vein M_1 not strongly arched anteriorly; postmetacoxal membrane covered with long setae (7 species – Londt 1983 1985*a*) .... **Daspletis** Loew

– Facial swelling occupying at most half of face and often with macrosetae only on lower half; dorsocentrals present only on posterior half of mesonotum; vein M_1 usually strongly arched anteriorly; postmetacoxal membrane often asetose (79 species – requires revision) .... **Microstylum** Loew

8 Anal lobe and alula without bordering vein (i.e. costa terminates at or before point where anal vein joins wing margin) 9

– Costa extends around entire wing margin (i.e. borders anal lobe and alula) (weakly in *Trichoura*) 14

9 Pulvilli minute or absent 10

– Pulvilli well developed 12

10 Costa extends as far as anal vein 11

– Costa terminates just beyond juncture with R_{2+3}, leaving almost entire hind margin of wing without bordering vein (15 species – new material suggests a revision is required) .... **Sisyrnodytes** Loew

11 Pulvilli present, but highly reduced; empodium present. Base of R_4 usually with short, proximally directed, branch. Palpi 2-segmented, well developed. Dorsocentral macrosetae not well differentiated. Small to moderately sized bee-

like flies (8 species – requires revision) .... **Acnephalum** Macquart

– Pulvilli absent; empodium absent. Base of R_4 without short, proximally directed, branch. Palpi appear 1-segmented, highly reduced. Dorsocentral macrosetae well differentiated. Tiny, not particularly bee-like flies (1 species – Londt 1985*c*) .... **Ammodaimon** Londt

12 Postmetacoxal bridge present (8 species – 1993*a*) .... **Rhabdogaster** Loew

– Postmetacoxal bridge absent 13

13 Mesonotum greatly elevated anterodorsally and hump-like (2 species – Londt 1996) .... **Oxynoton** Janssens

– Mesonotum not hump-like, but of more usual form (12 species – Londt 1994*a*; requires revision) .... **Afroholopogon** Londt

14 Palpi 1-segmented 15

– Palpi 2-segmented 17

15 Proboscis with spine-like processes distally; antennal style not clearly differentiated, distal seta sub-terminal (2 species – Londt 1992*a*) .... **Hynirhynchus** Lindner

– Proboscis of more usual form and lacking distal spine-like processes; antennal style clearly defined and with terminal pit-enclosed seta 16

16 Proboscis shorter than antenna; mystax covering ventral $\frac{1}{3}$ of face; ♂ mesotarsomeres 4 and 5 with peculiar spade-shaped setae (usually red in colour) (3 species – Londt 1981, 1999*a*) .... **Habropogon** Loew

– Proboscis longer than antenna; mystax covering ventral $\frac{1}{2}$ of face; ♂ mesotarsomeres 4 and 5 without spade-shaped setae (3 species – Londt 1990)..... **Pycnomerinx** Hull

17 Head almost circular in anterior view (i.e. face narrow) 18

– Head clearly wider than high in anterior view 22

18 Katatergites bare 19

– Katatergites setose 20

19 Prothoracic femur with large, proximoventral, spinose process (i.e. strongly raptorial) (30 species – requires revision) .... **Gonioscelis** Schiner

– Prothoracic femur of more usual form, lacking large, proximoventral, spinose process (a single East African species – this paper) .... **Stenopogon** Loew

20 Dorsocentral macrosetae extend along entire length of mesonotum (2 species – this paper) .... **Haroldia** gen. n.

– Dorsocentrals present only posteriorly on mesonotum 21

21 Antennal style composed of 2 elements (cylindrical segment and terminal spine-like element); ♂ hypandrium usually bifurcate distally (7 species – this paper) .... **Afroscleropogon** gen.n.

– Antennal style composed of 3 elements (narrow basal segment, longer cylindrical segment and terminal spine-like element); ♂ hypandrium usually simple (not bifurcate) (2 exceptions) (9 species – this paper) .... **Rhacholaemus** Hermann

22 Proboscis strongly downward-curved, resembling a parrot's beak (25 species – requires revision) .... **Ancylorhynchus** Berthold

– Proboscis not strongly down-curved 23

23 Face strongly projecting ventrally, giving a nose-like appearance in profile (6 species – Londt 1992*a*) .... **Lycostommyia** Oldroyd

– Face not projecting ventrally and of more usual form 24

24 Mystax extending from antennal bases to epistomal margin (i.e. entire profile) (Note: *Pedomyia astroptica* has a full mystax, but characteristic antennal structure) 25

– Mystax less extensive 29

25 Antenna with compressed, strap-like postpedicel and terminal 2-segmented style of similar form (2 species – Londt 1981) .... **Hermannomyia** Oldroyd

– Antennae of different form 26

26 Large flies, wing > 15 mm long, palpi greatly developed, especially second segment, extending well-beyond epistomal margin; anepimeral bristle absent (1 species – Londt 1992*b*) .... **Bana** Londt

– Small flies, wing < 10 mm long, palpi moderately developed, not extending beyond epistomal margin; anepimeral bristle usually present 27

27 ♂ terminalia club-like; epandrium greatly developed, hemispherical; hypandrium greatly reduced (4 species – Londt 1994*b*) .... **Corymyia** Londt.

– ♂ terminalia of more usual form; epandrium not greatly developed; hypandrium not greatly reduced 28

28 ♂ gonocoxite with 2, subequal, pointed, distal processes, the outer one with at most a small tumid dorsodistal projection; mystax well developed, extending to antennal sockets; scutellum with many marginal setae, these usually extending weakly onto the disc (central area usually asetose) (20 species – Londt 1993*c*) .... **Connomyia** Londt

– ♂ gonocoxite with outer process having a distal or dorsodistal flange-like process; mystax moderately well developed, extending to antennal bases, but usually weak in upper part; scutellum usually with few marginal setae which rarely extend onto disc (9 species – Londt 1993*c*) .... **Danomyia** Londt

29 Anepimeral macroseta present; metathoracic empodia laterally compressed and blade-like (3 species – Londt 1992*a*) .... **Empodiodes** Oldroyd

– Anepimeral macroseta absent; metathoracic empodia setose, not laterally compressed and blade-like 30

30 Lower $\frac{3}{4}$ of face clearly gibbose, upper part of swollen area clearly defined 31

– Face at most gently gibbose (upper part of swollen area not clearly defined) 32

31 Body entirely metallic blue-black; postpedicel elongate, cylindrical, *ca.* twice as long as first 2 segments combined; wing uniformly blackish (1 species) .... **Teratopomyia** Oldroyd

– Body not uniformly metallic blue-black; postpedicel strongly club-shaped, *ca.* as long as first 2 segments combined; wing transparent with dark markings (21 species – Londt 1985*b*) .... **Hypenetes** Loew

32 Mystax occupies at most the lower $\frac{1}{3}$ of face 33

– Mystax occupies at least the lower $\frac{1}{2}$ of face 36

33 Wing cells m_3 and cup closed and stalked; ♂ hypandrium highly reduced and largely fused with gonocoxites (6 species – Londt 1994*b*) .... **Trichoura** Londt

– Wing cells m_3 and cup open at wing margin; ♂ hypandrium moderately well developed and not fused with gonocoxites 34

34 Epandrial lobes entirely separated, except at base (3 species – Londt 1994*b*) ...... **Microphontes** Londt

– Epandrial lobes fused for at least basal half of length 35

35 Scutellar disc lacking setae; epandrial lobes fused for *ca.* half of length (3 species – Londt 1994*b*) .... **Macroetra** Londt

– Scutellar disc with few (*ca.* 4) setae; epandrium with slight posterior indentation (lobes hardly evident, being fused for entire length of epandrium) (2 species – Londt 1994*b*) .... **Irwinomyia** Londt

36 Postpedicel widening toward the middle (in lateral view), apical half appearing strongly incised ventrally; mystax occupying *ca.* $\frac{3}{4}$ face (9 species – Londt 1994*b*) **Pedomyia** Londt

– Postpedicel not widening toward the middle and without strongly incised apical half; mystax occupies *ca.* $\frac{1}{2}$ face 37

TABLE 1

Seasonal incidence of species.

	J	A	S	O	N	D	J	F	M	A	M	J
Afroscleropogon												
A. armatus	–	●	●	–	●	●	●	●	●	●	●	–
A. braunsi	–	–	–	–	●	●	●	–	–	–	–	–
A. bullingtoni	–	–	–	●	–	–	–	–	–	–	–	–
A. clementsi	–	–	–	–	●	–	–	–	–	–	–	–
A. dilutus	–	●	–	●	●	●	●	●	●	–	–	–
A. lavignei	–	–	–	●	●	–	–	–	–	–	–	–
A. nagatomii	–	–	–	●	–	–	–	–	–	–	–	–
Haroldia												
H. oldroydi	–	–	●	–	–	–	–	–	–	–	–	–
H. trivialis	–	●	●	●	●	–	–	–	–	–	–	–
Rhacholaemus												
R. antigenes	–	–	●	●	●	–	–	–	–	–	–	–
R. artigasi	–	–	–	●	–	●	–	–	–	–	–	–
R. fisheri	–	–	–	–	●	–	–	–	–	–	–	●
R. grimmi	–	–	–	–	●	●	–	–	–	–	–	–
R. hradskyi	–	–	–	–	●	●	●	–	–	–	–	–
R. josephi	–	–	–	●	●	–	–	–	–	–	–	–
R. nelsoni	–	–	●	●	●	–	–	–	–	–	–	–
R. tsacasi	–	–	–	–	●	–	–	–	–	–	–	–
R. variabilis	–	–	–	●	●	●	●	–	–	–	–	–
Stenopogon												
S. lehri	–	●	●	–	●	●	–	–	–	–	–	–

37 ♂ epandrial lobes long, entirely separated or very narrowly joined proximally; hypandrium more or less straight and distally directed (35 species – Londt 1992*c*) ....**Scylaticus** Loew

– ♂ epandrial lobes short, fused proximally for *ca.* $\frac{1}{3}$ their length; hypandrium elongate, ventrally directed with upturned distal region (1 species – Londt 1994*b*) ....**Agrostomyia** Londt

Distribution and seasonal occurrence

Distributional information for all species treated in this paper, with exception of the only recognised species of *Stenopogon* (*S. lehri* from Kenya & Somalia), is presented in Figs 134–140. All records for *Afroscleropogon*, *Haroldia* and *Rhacholaemus* are southern African. The following brief comments on the distributions of the genera can be made:

Haroldia is restricted to the coastal plain of the Western Cape Province (Fig. 137). *H. trivialis* has been chiefly collected on coastal sand dunes or on sandy ground within a few kilometres of the sea. The area concerned receives its rainfall mainly in winter. Collection data (Table 1) show adult activity confined to the late winter and spring months of August through to November (a well established pattern for many insects occurring in this area). These insects probably take advantage of the warmer days following winter rainfall when conditions are perfect for flowering plants and insects

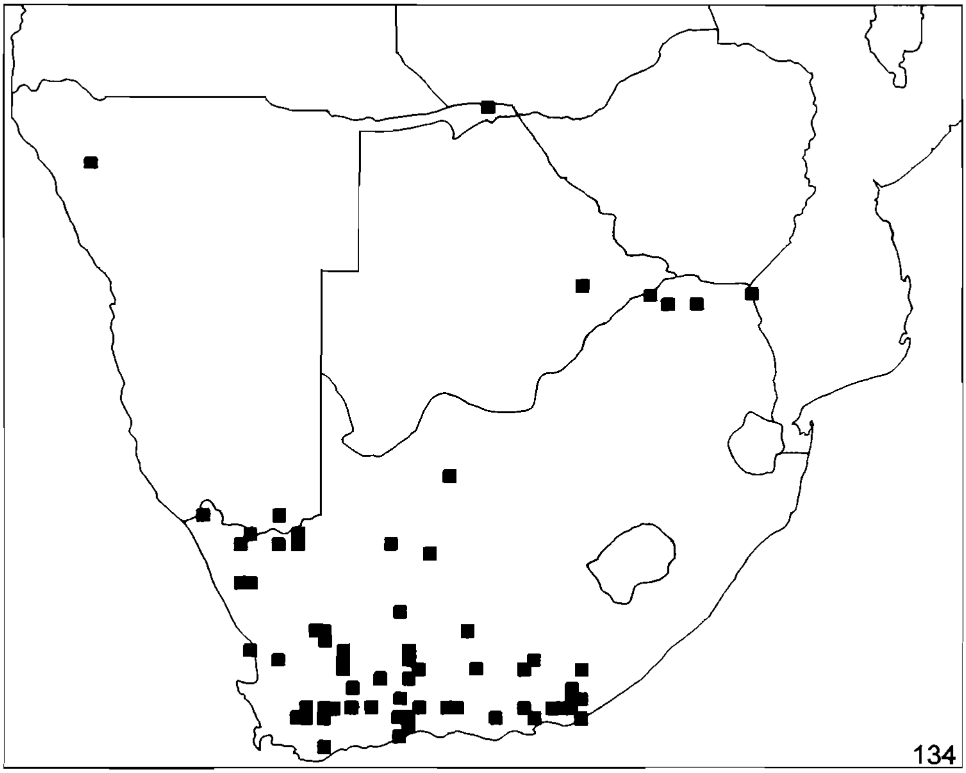


Fig. 134. Distribution of *Afroscleropogon* (all species).

associated with them. The hot, dry summer conditions are probably unsuitable for normal adult activity.

Rhacholaemus is found in the drier interior parts of the south-western Cape. Except for one record from southern Namibia, all records are from South Africa (Fig. 138). Although information for most of the species is limited, it appears that some species may be fairly widely distributed (e.g. *hradskyi* & *variabilis*) (Figs 140, 137). *R. josephi* has been recorded from the northern parts of the Northern Cape (Fig. 139), an area which has been generally poorly sampled, suggesting that the distribution of the genus may be more extensive. Species are active in the adult stage from September through till January (Table 1) (the single June record is probably erroneous). The areas inhabited by *Rhacholaemus* generally experience low rainfall.

Afroscleropogon is distributed over approximately the same area as *Rhacholaemus* (Fig. 134). Locality records for two species, *A. armatus* and *A. lavignei*, show that these species are widely distributed (Fig. 135) – *armatus* being recorded from north-west Namibia, Botswana and the Northern Province of South Africa. As in *Rhacholaemus*, data for many of the species is limited. For two of the more commonly collected species, *A. dilutus* (Fig. 136) and *A. braunsi* (Fig. 135), quite good indications of range appear to be available. Although species are generally active over the same period as species of *Rhacholaemus* (Table 1), two (*armatus* and *dilutus*) may be collected between late winter (August) and autumn (March to May). These two

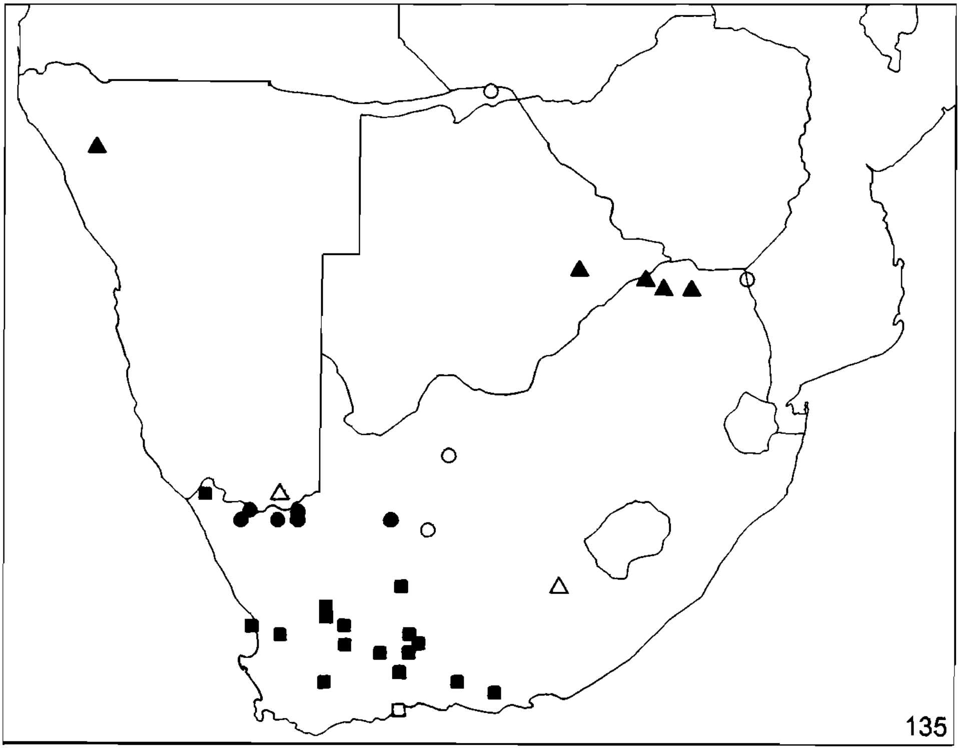
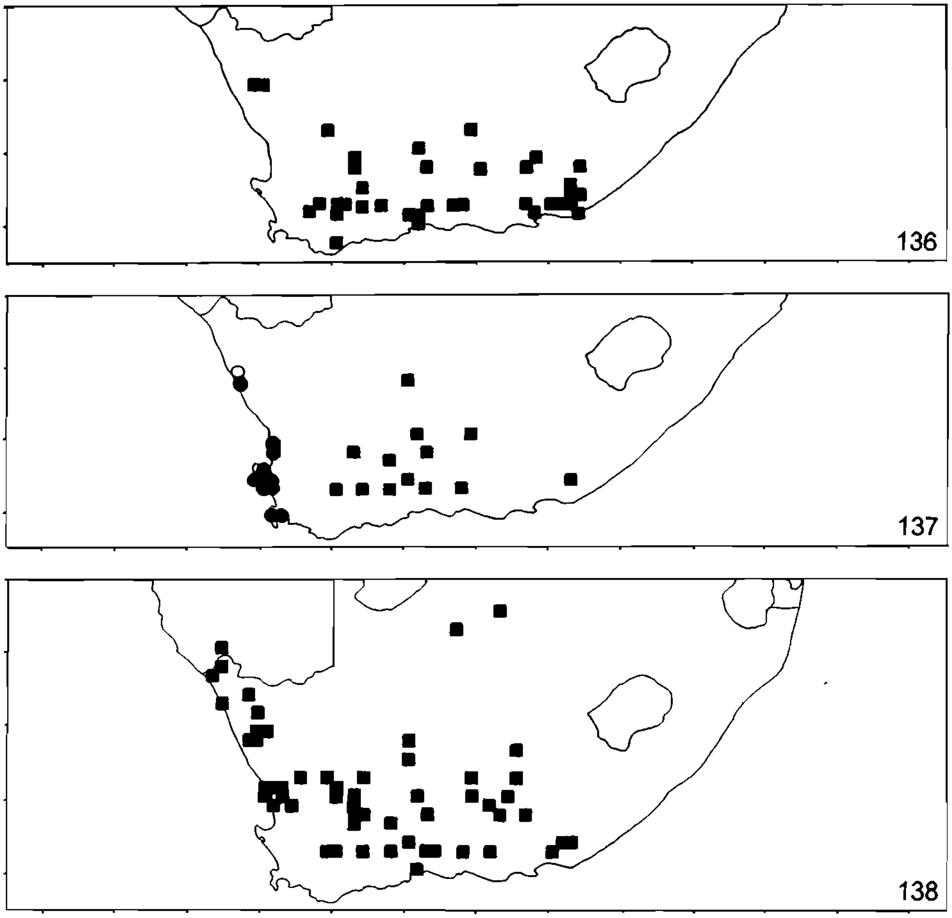


Fig. 135. Distribution of *Afroscleropogon* species. *A. armatus* – solid trangles. *A. braunsi* – solid squares. *A. bullingtoni* – open triangles. *A. clementsi* – open square. *A. lavignei* – open circles. *A. nagatomii* – solid circles.

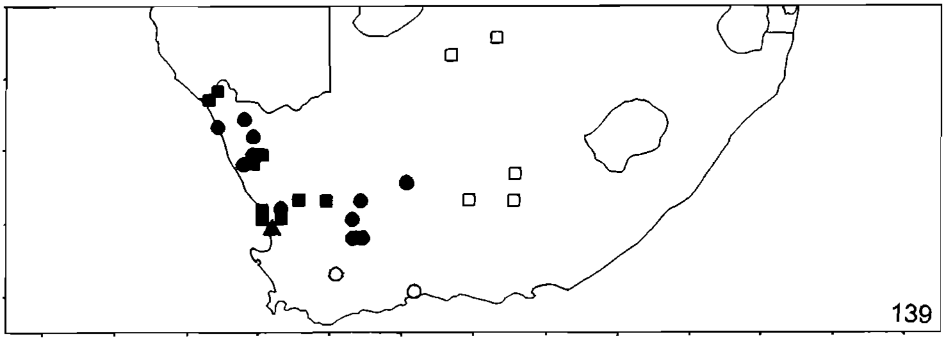
species occupy areas of relatively higher rainfall, which may explain their longer period of adult emergence.

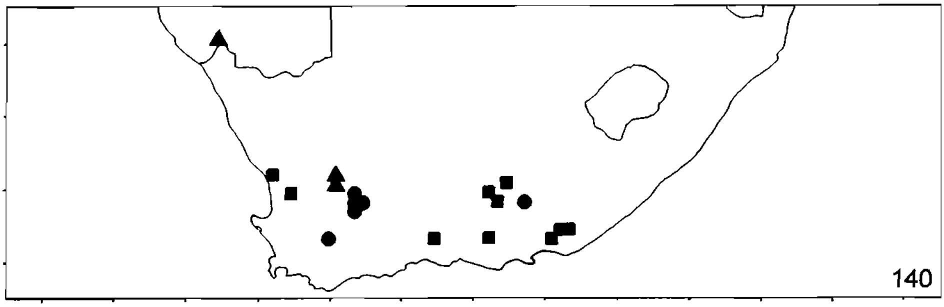
Phylogenetic relationships

Although Tables 2–3 have been included primarily to supplement the descriptive information provided in the keys to species dealt with in this paper, they could be adapted for use in any future cladistic analysis. Such a study should ideally include all the taxa of the tribe, or better still the subfamily, and is therefore far beyond the scope of this paper. The character state information in Table 2 is arranged to indicate suggested polarisations (a + character state being considered the derived condition). Data relating to the genotypes of taxa which would need to be included in any phylogenetic analysis is included in Table 3 (i.e. *Gonioscelis hispidus* (Wiedemann, 1819), *Scleropogon picticornis*, *Stenopogon sabaudus*) to facilitate comparisons.



Figs 136–138. Distributions. 136. *Afroscleropogon dilutus*. 137. *Haroldia* and *Rhacholaemus* species. *H. oldroydi* – open circle, *H. trivialis* – solid circles, *R. variabilis* – solid squares. 138. *Rhacholaemus* (all species).





Figs 139–140. Distributions of *Rhacholaemus* species. 139. *R. antigenes* – solid circles, *R. artigasi* – open circles, *R. josephi* – open squares, *R. nelsoni* – solid squares, *R. tsacasi* – solid triangle. 140. *R. fisheri* –triangles, *R. grimmi* – circles, *R. hradskyi* –squares.

Biological information

Life cycle: No information is available. As adults are usually encountered on open ground and females have acanthophorites, it is assumed that oviposition takes place directly into the soil and that larval development is entirely subterranean.

Adult diet: Only six prey records are available. *A. dilutus* (four AMGS records) – Apidae (*Apis mellifera*); Halictidae (♀ *Halictus* sp.; ♀ *Lasioglossum* sp.); Vespidae (♂ *Ropalidia* sp.). *A. braunsi* (one NMSA record) – Megachilidae. *R. variabilis* (one NMSA record) – Asilidae (*Microphontes* sp.). As five of the six records are small Hymenoptera, four being bees, it suggests that these asilids are specialist predators of small pollinating insects.

ACKNOWLEDGEMENTS

I thank Eric Fisher, Riley Nelson and Stephen Bullington for constructive comments on the relationships between genera within the Stenopogoninae, and Robert Lavigne and Robert Copeland for the donation of material from Somalia and Kenya respectively. David Barraclough and Brian Stuckenberg provided useful comments on the manuscript. The Foundation for Research Development (now incorporated into the National Research Foundation) provided financial support in the form of a research grant.

TABLE 2

List of characters used in comparative character matrix (Table 3).

1 Dorsocentral macrosetae absent from anterior half of mesonotum (+) or present (-).

2 Katatergites bare (+) or with setae (-).

3 Prothoracic femora raptorial, i.e. with 'spinose' proximoventral projection (+) or not so (-).

4 Antennal style composed of two (+) or three (-) elements.

5 Posterior margin of hypandrium with indentation medially (i.e. 'bifurcate') (+) or simple (i.e. smoothly rounded medially) (-).

6 Epistomal margin directed upwards medially such that oral cavity projects above a line drawn between the bases of the eyes in anterior aspect (+) or epistomal margin directed in a more downward direction such that oral cavity lies in line with or below a line drawn between the bases of the eyes in anterior aspect (-).

7 Proboscis dorsoventrally curved (+) or straight (-).

8 Antennal style located subterminally (+) or terminally (-).

9 Proboscis thickset (length less than 5 times depth) (+) or slender (-).

10 Prothoracic femur with strong anteroventral macrosetae (+) or lacking a row of strong anteroventral macrosetae (-).

11 Aedeagal apex thickset (+) or more slender (-).

12 Hypandrial apex narrowed (+) or broader (-).

13 Hypandrium bifurcate due to the development of lateral lobes (+) or simple or indented distally (-).

14 Mesonotal macrosetae black (+) or pale brown, yellowish or white (-).

15 Epistomal margin projecting to form a slight and somewhat pointed gibbosity (+) or plane or projecting to form a slight and somewhat rounded gibbosity (-).

16 Proboscis reduced in size (i.e. length/depth <2.0) (+) or large (length/breadth >1.9) (-).

17 Wing membrane with white microtrichia at least in basal part, giving a milky appearance (+) or lacking white microtrichia (-).

18 Abdominal macrosetae well developed (+) or at most weakly developed (-).

19 Face strongly gibbose for most of its height (+) or plane or at most weakly projecting in ventral half (-).

20 Face protruding as two separate gently rounded gibbosities (+) or plane or protruding as a single gibbosity (-).

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TABLE 3

Comparative character matrix for taxa included in this study
(Characters numbered along top row as in Table 2).
Comparative information is included for the genotypes of *Gonioscelis*, *Stenopogon* and *Scleropogon*.

Characters

Species	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
A. armatus	+	−	−	+	+	+	+	−	+	+	−	−	−	−	−	+	−	−	−	−
A. braunsi	+	−	−	+	+	+	−	+	−	−	−	−	−	−	−	+	−	−	−	−
A. bullingtoni	+	−	−	+	−	+	−	+	−	−	−	−	+	−	−	−	−	−	−	−
A. clementsi	+	−	−	+	+	+	+	−	+	−	+	+	−	−	−	−	−	−	−	−
A. dilutus	+	−	−	+	+	+	+	−	+	−	−	−	−	−	−	−	−	−	−	−
A. lavignei	+	−	−	+	+	+	+	−	−	+	−	−	−	−	−	+	−	−	−	−
A. nagatomii	+	−	−	+	+	+	+	−	+	+	−	−	−	−	−	+	−	−	−	−
H. oldroydi	−	−	−	+	+	−	−	−	−	−	−	−	−	−	−	+	−	−	−	+
H. trivialis	−	−	−	+	−	−	−	−	−	−	−	−	−	+	−	+	−	−	−	+
R. antigenes	+	−	−	−	−	−	−	−	−	+	−	−	−	−	+	−	+	−	−	−
R. artigasi	+	−	−	−	−	−	−	−	−	+	−	−	−	−	+	−	−	+	−	−
R. fisheri	+	−	−	−	−	−	−	−	−	+	−	−	−	−	−	+	−	−	−	−
R. grimmi	+	−	−	−	−	−	−	−	−	+	−	−	−	−	+	−	+	−	−	−
R. hradskyi	+	−	−	−	−	−	−	−	−	+	−	−	−	+	−	+	−	−	−	−
R. josephi	+	−	−	−	−	−	−	−	−	+	−	−	−	−	−	+	−	−	−	−
R. nelsoni	+	−	−	−	−	−	−	−	−	+	−	−	+	+	+	+	−	−	−	−
R. tsacasi	+	−	−	−	+	−	−	−	−	+	−	−	−	+	+	−	+	+	−	−
R. variabilis	+	−	−	−	−	−	−	−	−	+	−	−	−	−	−	+	−	−	−	−
St. lehri	+	+	−	−	+	+	−	−	−	+	−	−	−	−	−	−	−	−	+	−
Comparative data for taxa not treated in this paper.																				
G. hispidus	−	+	+	−	+	+	+	−	−	+	−	+	−	+	−	−	−	−	+	−
Sc. picticornis	+	−	−	−	−	+	−	−	−	+	−	−	−	−	−	−	−	+	+	−
St. sabaudus	+	−	−	−	−	+	−	−	−	+	−	+	−	−	−	−	−	−	+	−

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